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SYMPOSIUM ON RESOURCE CONSERVATION AND RECOVERY

TUESDAY, APRIL 6, 1976

COOLIDGE AUDITORIUM,
THE LIBRARY OF CONGRESS,
Washington, D.C.

DIMENSIONS OF THE DISCARDED MATERIALS PROBLEM

SESSION 1—3:30 P.M.

A Symposium on Resource Conservation and Recovery from Discarded Materials convened in the Coolidge Auditorium of The Library of Congress, Washington, D.C., at 3:43 p.m., Representative James J. Florio and Representative Fred B. Rooney, moderators, presiding.

Mr. ROONEY. Today begins the Congressional Symposium on Resource Conservation and Recovery From Discarded Materials sponsored by the Transportation and Commerce Subcommittee of the Committee on Interstate and Foreign Commerce.

The purpose of this symposium is first to bring into one forum those persons that work daily with the problems caused by discarded materials and the members of the congressional committee that has jurisdiction over this very serious problem.

The symposium format was chosen specifically because it lends itself to discussion, and focused discussion lends itself to solutions. It is hoped that the discussions that will take place over the next 2 days will not only illustrate the problems involved, but will also assist the subcommittee to develop solutions to those problems.

The second purpose for the symposium is to give visibility to the problems caused by discarded materials. We are all aware of the extreme examples of Kepone, or arsenic; however, there is little awareness of the day-to-day problems faced by every city in this Nation to remove the garbage from its streets everyday. Most citizens just know their garbage is picked up, they do not know where it goes, how it is disposed of, or the social and economic costs of such disposal.

Third, this symposium, it is hoped, will have a practical nature of informing the public of the technology, planning, and financial assistance that are available from private enterprise as well as the government in order to solve the problems caused by discarded materials.

Further, few citizens are aware of the fact that within the next 10 years this Nation's 50 largest cities, as well as thousands of small communities, will run out of available landfill space. What are we to do with our garbage—fill up our parks and lakes? I hope that we as a Nation can be more imaginative.

The problems encountered by any governmental involvement in what to do with discarded materials is that discarded materials are more than just garbage, they are representative of a lifestyle. And, lifestyles are difficult to affect by legislation. Therefore, any legislation that is developed in the area of discarded materials, because of its potential effects on lifestyles, energy and materials availability, economic markets, and employment, must be specific so that it does not have any unintended disastrous side effects that may depress economic markets, destroy private incentive, or cause massive unemployment in this country.

The goals of legislation drafted to remedy the discarded materials problem should be a balance between economic and environmental realities. Let me illustrate how I perceive such a balance might work.

Last year this congress passed the Safe Drinking Water Act so that all citizens could drink water safe from any hazardous materials. However, preliminary damage reports indicate that such an act may not be enforceable because 50 percent of all drinking water comes from underground or surface waters and such waters are being daily polluted by leaching from nearby dumps and landfills. This is an example of where the economics and regulations are now a reality, yet the problem is not being solved.

Another example of balancing economics and environment can be illustrated by demonstrating the disastrous effects posed by the lack of a solid waste or discarded material legislation.

After passage of the Clean Air Act this Nation made its policy to take the pollutants out of the air. Such pollutants were dumped on the land.

After passage of the Water Pollution Control Act the Nation's policy was to take the pollutants out of our waters. Again, such pollutants are dumped on the land.

Now we are discovering that dumps and landfills pollute the air and leach into water supplies thereby making the other legislation less effective. Therefore, since the funds and regulations for the other laws are in place, a solid waste or discarded materials act is necessary if the economics and regulations of the other acts are to be effective.

Further, solid waste or discarded materials legislation is unlike the Clean Air Act or the Water Act in that it is not strictly regulatory or prohibitive.

Discarded materials legislation, if properly and promptly drafted, would be a catalyst for energy recovery in the form of steam, gas, and oil. It would assist in recovering valuable metals which in turn would reduce our balance of trade. Both energy and materials recovery would make the United States more independent of the actions of foreign cartels.

Yet, energy and materials recovery, beneficial as they may be, are only the byproducts of the real concern which is to get the garbage

off the streets and to dispose of it in a manner that does not harm the environment or impair the enforcement of other environmental acts.

Last, it is my hope that this symposium will be the beginning effort of transforming what is presently a problem into a lasting benefit for the Nation.

I would now like to present my colleague from the State of New Jersey, Mr. Florio.

Mr. FLORIO. Thank you very much, Mr. Rooney. I appreciate the very good attendance this afternoon. My role this afternoon is to be the moderator for this panel which is entitled "Dimensions of the Discarded Materials Problem."

In essence, as the first of this series of programs, its main purpose is to put into perspective the scope of the problems, the complexities of the problems. I am sure many of you are aware of these.

We call upon these experts to lend some appreciation to the complexity of the problem in the hopes that the discussion generated will give us a basis for the succeeding panels to deal with the specific options that may be available.

The chairman gave a very comprehensive statement of the nature of the problems. Suffice to say, he threw out one fact that I think brings home the magnitude of the difficulties this country is going to face. The amount of garbage that the Nation is producing is increasing from 4 to 6 percent per year at a cost to the already hardpressed, financially drained municipalities of from $4–6 billion per year. It is fairly clear that we cannot afford not to do something about this problem. That is going to be the thrust of the legislation that we will be dealing with.

Members of the panel, we are very appreciative of your participation in the hopes that we can get some input to make this more meaningful legislation; legislation that will realistically address the problem.

I am just going to indicate what the panelists are going to be talking about today. They have in front of them their names so you will be able to identify them more readily.

Mr. Meyers, Deputy Administrator of EPA, who will give a brief overview of the problem.

Mr. Beals will discuss the role of problems in the cities of collecting and disposing of discarded materials.

Dr. Savas, who surveys the collection system of over 2,000 cities, will discuss collection, its costs, and the problems contained therein.

Mr. Haun will focus on the position of American business as a generator of waste, a promoter and potential user of the materials recovered from discarded materials.

Mr. Palmer will discuss the role of the generators of industrial waste, the responsibility of such manufacturers to provide for safe disposal of such waste, and the cost and problems of disposing of that material.

Mr. Evans will discuss the burdens placed upon the environment by discarded materials.

Finally, Dr. Petrone will discuss some potential solutions to the problems discussed.

As you can all see, the problem is wide in scope and of great magnitude. We are hoping to deal with the format this afternoon and have each of the participants speak for a 5-minute period. We will then have an opportunity for some interchange between the participants and then a closing statement by the participants.

It is my understanding that Mr. Meyers is to proceed first.

ADDRESS OF SHELDON MEYERS, DEPUTY ADMINISTRATOR, ENVIRONMENTAL PROTECTION AGENCY

Mr. MEYERS. I want to do two things this afternoon. The first is to convey to you the concept that solid waste in this country is indeed a problem. Secondly, I would like to reemphasize some of those things that Congressman Rooney just said.

The United States, with 6 percent of the world's population, consumes more than one-third of the world's natural resources and much of these natural resources through various manufacturing processes, through the consumer, end up as wastes on land. In this country we annually generate some 135 million tons of municipal waste, 260 million tons of industrial waste, and 7 million tons of sewerage sludge. These numbers, as someone pointed out earlier, increase at a rate of about 5 percent per year. The municipal solid waste component alone of this waste drain consist of the following: 67 percent of all of the paper produced in the United States; 81 percent of all of the glass produced in the United States; 12 percent of all the steel produced in the United States; and 16 percent of all of the aluminum.

The problem is several fold. Some of the points have been mentioned earlier. The large urban areas in this country within the next 10 years will be running out of the most convenient and cheap form of waste disposal, that is, landfills. In many areas that do use landfills, the term "sanitary landfill" is nothing more than a name that disguises an open dump.

As already mentioned, the various laws and regulations we now have on the books with regard to air pollution control and water pollution control essentially take pollutants out of those particular media. When you take sulfur oxide out of air, when you take certain pollutants out of water, they generally end up either as a solid or a sludge with the ultimate disposal being aimed at the land.

We have here a situation where there is an open loophole in the country's pollution control scheme. That is, we have stringent regulations on air and water. We have essentially no national regulations with regard to land disposal. There are various States who have on their own accord for their own reasons, passed laws and regulations that control the disposal on the land. However, our studies indicate that 90 percent of land disposal is done in an environmentally unsound manner.

This all leads to both environmental and health facts. In those instances where incineration is still a form of disposal, and it is in many parts of the country, we have air pollution problems. Congressman Rooney has mentioned the leachate problem, which is associated with what we have been calling in the past "sanitary landfills." Over many years with improper climatic conditions, particularly rain over

time, one will get a leachate, the results from the various materials in sanitary landfills that will drift to the water supply. As mentioned, half of the population of this country depends on ground water for its drinking water. This does not mean that all sanitary landfills are bad.

In the entire scheme of solid waste management in the future there is a role for well designed, well engineered, properly maintained and properly controlled sanitary landfills.

I am sure that many of you read over the weekend in the paper of an incident in Richmond, Va., where a community was built on a land disposal site and is now undergoing some rather traumatic experiences in that the landfill in addition to leachate generates methane gas. In this particular community they are obliged to keep their windows cracked open all year so that the gas can escape. It seems to be prevailing in that particular area. This is a particular fault of the developer. The community should never have been built on the landfill but the kind of problem that it exemplifies is there.

Additionally, open dumps which are still used in many parts of the country generate rodents and other vector breedings. In many cases hazardous waste disposal which of the 260 tons of industrial waste I mentioned earlier, 10 percent of that is hazardous material. Those have much more severe ramifications, particularly if they are mixed in with sanitary landfills and the standard municipal disposal systems.

What is one man's problem is another man's opportunity. Congressman Rooney has mentioned that there are solutions to these problems.

We all know that many communities and other organizations have been talking about the concept of resource recovery. This is an important concept since it can be part of the solution to this ever growing problem. Many reasons dictate this—those that I have already mentioned and the obvious scarcity of natural resources.

Over time, there is no doubt that we will run out of those unrenewable resources such as oil, such as minerals. There is no doubt about it. Whether it is in the next century or the century after, we will run out.

In the arena of resource recovery and the use of the municipal waste stream, we have an opportunity today to do something about it. We can recover energy and materials both, in addition to conserving resources. EPA has been working in this arena for the past 10 years. A good deal of work has been done. A lot more needs to be done and some people on this panel will be addressing that particular problem later on.

I want to wrap up just by again saying the same thing that I started with—there is indeed a problem. The numbers I have given you are merely indications of the problem. They are the quantification, if you will. It is not the same kind of thing as air pollution or water pollution. It is something different but nevertheless still a problem. These are instances that are occurring, if not daily, on a more frequent basis than in the past.

One point that I want to mention is that the city of Philadelphia disposes of its municipal wastes in the State of New Jersey. The State of New Jersey passed a law that essentially said the importa-

tion of solid waste from out of State with certain conditions is not allowed. The State Supreme Court of New Jersey upheld that decision. I heard only yesterday that the Supreme Court of the United States agreed to hear that case. The argument on the side of Philadelphia is that it would be a violation of the commerce clause in the Constitution. From EPA's perspective, the banning of the importation of waste does violence to our concepts of regionalized management of various pollution control schemes.

With that, I will pass it on to the next speaker.

Mr. FLORIO. Thank you very much.

Editorial comment on behalf of New Jersey: The New Jersey position is that Philadelphia has not complied with Pennsylvania law so as to undertake those steps necessary to utilize existing facilities that are located in the State of Pennsylvania adjacent to the city of Philadelphia.

Our next panelist is Mr. Beals.

ADDRESS OF ALLAN BEALS, NATIONAL LEAGUE OF CITIES

Mr. BEALS. Thank you, Mr. Chairman.

The challenge faced by cities in their efforts to properly manage the Nation's solid wastes were summed up accurately by a former mayor of one of our major cities a couple of years ago when he said, "Everyone wants us to pick up their trash, but no one wants us to put it down."

No matter how efficiently or regularly the cities pick up garbage or trash, they have to put it somewhere. It is in large part because the problems relating to local solid waste disposal are something that we are carrying on about in this symposium.

Solid waste management is probably, without a question, one of the most difficult problems confronting both the Government and the country today. Solid waste collection and disposal compiles the third highest expenditure of local government budgets. It has been pointed out it averaged about $6.5 billion a year over the last 2 years. It is estimated to exceed an annual cost of $10 billion a year by 1980. Only public schools and roads cost us more of local government expenditures.

On the collection side, 70 to 80 percent of the collection cost goes for labor. Of course, when it comes to personnel costs, cities are hit by the same inflationary spiral as any service industry. Disposal costs are up as well, primarily because of two trends. As cities have upgraded their disposal operations to meet environmental standards, the costs have edged upward also. Secondly, precisely at the same time when many cities are running out of room at the landfill and need to establish new disposal sites land available for disposal is both scarce and increasingly expensive to secure.

Some people said, well, what about the use of your Federal revenue sharing funds to help deal with some of these physical problems? The answer to that is that, in fact, many cities have applied portions of their revenue-sharing checks to their local sanitation programs, in most cases, and the capital expenditure for land acquisition and so forth.

Where the financial impact really hurts is in the ever increasing volume of solid waste and trash that cities must handle while the revenue sharing check remains the same, and it is proposed by Congress to remain the same over the next 3¾ years.

At the same time, cities are also being hit by raised costs for other environmental control programs and more stringent requirements for sewerage treatment, clean air, land use planning, and everything else. There apparently is no end in sight.

I would like to make, briefly, three general observations about the solid waste problem by implication about urban problems generally: (1) Local officials have little policy space; (2)the problem is more than local; (3) there is a strong national policy, large inadvertent and hidden, which works against solutions.

The last, to a large part, I will explain first.

While local officials have the primary responsibility for solving solid waste problems, the range within they can make effective decisions is small as you well know. It is a case of responsibility without authority or power. The problem is more than local in different senses. It is huge and requires the kind of resources that individual municipalities cannot generate. Solutions in one jurisdiction have impacts on others.

Further, strictly local solutions are difficult because of the competition that is natural when no more general solutions can be attempted. Most importantly, the well meaning and vigorous local efforts are likely to fall short because they do not find a congenial setting in national policy.

For a Nation facing inevitable resource scarcity, it is inexcusable that current Federal policy shows no awareness of the relationship between the generation and disposal of solid waste and the depletion of natural resources.

I would submit that in the area of solid waste management, one that is local in impact but national in scope, the Federal Government must expand its role substantially. Specifically, the National League of Cities has urged a four-point program to help meet and address these problems.

The first is to establish a statewide solid waste planning process which mandates local government involved both in the planning and subsequent implementation of schedules for meeting these standards. As a minimum, such a system should provide four component parts:

One: Advanced designation of disposal sites.

Second: An inventory of present and anticipated solid waste disposal sites, resources recovery facilities and needs.

Third: The designation of regional organizations within the State composed of local officials with the authority to plan for and implement solid waste programs.

Last: The right of local government to take the initiative when states fail to act.

We feel that section 208 of the Federal Water Pollution Control Act presents a good model of the process. The second part of the national program would be to establish national source reduction standards. The Federal Government should impose taxes on, regulate

where necessary, prohibit packaging and other products which impede or aggravate solid waste management procedures, especially those relating to collection or disposal. Specifically, this should include measures which fall directly within the jurisdiction of the Subcommittee on Transportation and Commerce, including those which would ban the use of nonreturnable beverage containers and require a deposit on all returned containers.

I might note at this point that the EPA has said that if each individual used no more packing in 1972 than he did in 1958, we would have saved 600 trillion Btu's in 1972, or the equivalent of approximately 300,000 barrels of oil.

It is the firm policy of our organization in pollution and, in this instance, solid waste to the maximum extent possible must be controlled and reduced at its source without question so its reduction is the most effective method for dealing with the solid waste problem. It is also the most effective means of promoting conservation of scarce national resources and energy.

The third component to a national program is to expand the Federal technical assistance program to bring about greater efficiency and better management in the collection and handling and disposal of solid waste.

The National Commission on Productivity recently concluded that improving productivity and waste collection, as I pointed out that accounts for 78 percent of the cities' solid waste budgets, we could reduce collection costs by 20 percent in most systems. This potential together with improvements in waste disposal techniques will only be realized with an expanded technical assistance program on a national basis which facilitates the interchange of information so essential to these kinds of operations.

Last: We need an expanded Federal solid waste program. There is a great need for substantial research and a variety of solid waste management programs, resources, recommendations, technologies of these problems which are beyond the capability of the Nation's cities. We propose the establishment of a national center for solid waste research as part of the Federal Government's involvement in the solid waste program. That center should address the gambit of disposable issues, including leachate, methane, transportation requirements and safeguards relating to rail haul, improve methods of separating recoverable waste from mixed municipal waste and so forth.

We think that the disposal of waste and conservation of precious natural resources are two of the most challenging problems facing our governmental institutions during the latter third of this century. In the past, the Federal Government has minimized the problems of solid waste. Inaction on legislation currently before the Congress, generally tends to perpetuate this whole priority.

I am confident and hopeful, however, that through a symposium of this nature and with the leadership of this committee, this trend can be reversed and the Nation can imbark upon a sound course of resource conservation.

Thank you, Mr. Chairman.

Mr. FLORIO. Thank you very much.

You have placed your favor on one of the main purposes of the symposium, that is, to bring to the public's attention the gravity of the problem and hopefully generate some public support for movement in this area.

Our next speaker is Dr. Savas, who will talk on a problem that is very much related.

ADDRESS OF DR. E. S. SAVAS, COLUMBIA UNIVERSITY GRADUATE SCHOOL OF BUSINESS

Dr. SAVAS. Thank you, Mr. Chairman.

Mr. Beals has described the total amount of money being spent in the United States for solid waste management as about $6.5 billion a year and has pointed out that about three-quarters of that goes for collection. Given these large numbers, there is clear interest on the part of local government which is suffering under pressures, taxpayer revolts and the need for increased productivity to improve the efficiency of solid waste disposal systems.

As part of a large scale nationwide study supported by the National Science Foundation, the group responsible for Government studies of Columbia University has been looking at in part the cost of efficiency of residential solid waste collection. The principal factors affecting costs, of course, are wages and fringe benefits. Refuse collections and solid waste collections is a labor intensive activity. Approximately 69 percent of the costs are due to that factor. Service level, of course, also influences the cost experienced by a community for solid waste collection. The more frequent the collection, the more convenient the collection in terms of back-door service rather than curbside service, the more costly it will be.

The third factor, the distance to the disposal point is a very key factor in terms and we will shortly be discussing the impact on resource recovery. The business of disposal point strongly affects cost of collection.

Finally, the size of the waste collection organization is also important. There are some problems of scale in solid waste collection which are not as large as some believe. We estimate that there are problems in efficiency. There is a scale of population size of about 50,000 or 60,000.

A major factor, however, that seems to affect efficiency is the arrangement used to provide the service. In the United States if one looks at the various communities, there are a number of important different ways of organized refuse collection services.

The municipal agencies, of course, provide collection service through departments of sanitation in public works. In addition, many cities contract with private firms and pay private firms to collect residential refuse.

The third common arrangement is for a city to grant an exclusive franchise to a private firm and the private firm then charges the household for services.

A fourth different common arrangement is to have a private competitive arrangement where many different firms may service a com-

munity and the householder has some kind of a choice about which firm to purchase services from.

It turns out that the private sector plays a large role. About two-thirds of the cities in the United States with populations greater than 2,500 have private firms collecting at least some of the residential refuse. Only about 37 percent of such cities have municipal agencies performing that service.

The most striking finding from our recent study is that there are very significant differences in the cost per household according to the arrangement that is employed by the city. In particular, the municipal collection and private competitive collection costs about 34 percent more per household than the arrangement whereby a city hires a private firm under contract to provide that service. This is in spite of the fact that private firms pay taxes and earn profits. Those numbers are included in the prices that are charged. This number, 35 percent increased costs, compared to municipal collections, private competitive collections are 34 percent greater than contract collections, should be compared to the numbers cited by Mr. Beals. The National Commission on Productivity estimated a 20-percent improvement could be obtained in efficiency of residential solid waste collection. By such technical and managerial improvements within the existing organization, it appears that there are very large improvements that can be obtained depending on the arrangements used.

I should point out an important limitation or an important caveat on our findings. These findings apply to cities larger than 50,000 population. For cities smaller than 50,000, the arrangement that is used does not appear to have any significant effect on the cost per household.

The findings refute a common suggestion that government can do things cheaper because it doesn't have to earn profits. At least with respect to solid waste collection, that common assertion does not appear to be true. Depending on one's idealogical persuasion, one can assign different causalities to a finding, of course. We cannot prove the causes. We have no scientific basis for determining why it is that municipalities which contract with private firms get a lower cost per household than municipalities which do it themselves or which provide competitive arrangements.

However, there are some revealing statistics that we obtained. Compared to private firms providing services under contract to cities over 50,000 in population, municipal agencies performing this experience larger absenteeism, have larger crews, spend more labor hours per household per year for providing that service.

The policy perscription that might emerge from this then is that cities larger than 50,000 would be advised to look into and compare the possibility of changing from their present arrangement, be it municipal collection or private competitive collection, and to change over to contract collection. The political problems of doing so, of course, are great, however, in the light of pressures for increased productivity, the climate seems to be changing as more cities are examining these kinds of alternatives.

With respect to the relationship between refuse collection and resource recovery, the five important points that I would like to make:

One: There should be clear recognition that there are two very different strategies for resource recovery, at least for materials recovery, one strategy is to segregate at the source of generation, to collect materials separately and get them into the resource recovery stream.

Another very different strategy is to collect refuse on a mixed basis and to have a facility which is capable of separating the refuse into various categories.

Given the rapidly changing evolution in resource recovery, technology, and in the economics of resource recovery, it would appear to be important to leave options open and not to foreclose options until the technological picture and the possibility of changing peoples' attitudes about source segregation versus separation at the large facility until those factors become clearer.

A facility which requires large capital investment and which requires locking up garbage supply sources with long-term contracts may forever do with possible improvements in source separation and possibilities of separating collection early in the stream before it becomes perhaps more expensive to separate out.

One can envision, I say "envision," a rejection of a situation someday where the refuse collector may say, "I will be happy to collect the refuse for nothing provided you separate aluminum cans, tin cans, and newspapers." The possibility of that emerging, or that happening, must be borne in mind in evaluating or trying to encourage one source of resource recovery over another.

The second important factor is that improper or environmentally threatening disposal dumps are closed down and the remaining disposal facilities are relatively few and far between, the cost of collection in terms of higher transportation costs increases. Construction of relatively large scale isolated regional resource recovery facility will, of course, accentuate the trend and it must be borne in mind the increased cost of collection must be balanced against the savings emerging from a resource recovery facility. This again would emphasize the need for increased productivity on the resource end.

A third point in mind in passing legislation is that a reduction of the number of proposal sites and construction of a limited number of regional resource recovery facilities by increased distance to disposal points would tend to decrease the amount of self-service that occurs. A significant, small but significant, fraction of the American population does carry its own refuse at the present time to disposal points. If the number of disposal points is decreased, then clearly we should move toward a more mandatory collection requiring organized collection provided in communities. There are some political obstacles to this. Of course, there are some communities I am aware of on the west coast which feel so strongly about the right to forever provide their citizens with the right to bring their refuse to the town dump; that it is enshrining the city charters.

Fourth: The next to last point I would make on this issue is that we must, whenever the solutions tend to emerge gradually, we must not confuse economies of scale and disposal or resource recovery with

economies of scale and collection. There are two very different processes with very different economies of scale. One might choose, for example, to have relatively few regional centralized resource recovery and refuse processing facilities. This is not to say, however, that the same scale must be employed on the collection front.

As I indicated before, the economies of scale seem to be exhausted with service agencies, with service population sizes of about 50,000 or 60,000. One can envision many separate refuse collection organizations, both public or private, coexisting and servicing one large refuse disposal resource processing facility.

Finally, of course, I will go on to an important issue that has to do with regulation. If we envision centralized resource recovery facilities with exclusive rights to receive all refuse generated in a particular area, we must be keenly aware of the difficulties of regulation that are then created, the need to determine what the prices are that are to be paid and what the costs are to be charged. These important issues of regulations do emerge at the time, particularly when we are examining various ways of regulation of various industries and determining indeed whether regulation is difficult.

The regulation issues must also be provided for in any legislation which may emerge on this issue.

Thank you, Mr. Chairman.

Mr. FLORIO. Thank you very much.

Perhaps just to reinforce one of the points that was made with regard to the cost efficiency of contracting out as contrasted with maintaining municipal collection systems, in my own city of 100,000, it recently did go to contracting out and saved substantial amounts of money. To deal with one of the political problems and you made reference to the problem of what to do with municipal collectors, that is, the trashmen, negotiating into the contract with a private collector. There was a provision that in hiring new personnel, we would be required to provide the existing municipal trashmen with first option for employment. As a result, many of the problems were solved.

Our next spokesman is Mr. Haun, who will speak with regard to the business impact problem.

ADDRESS OF DR. J. WILLIAM HAUN, U.S. CHAMBER OF COMMERCE AND NATIONAL ASSOCIATION OF MANUFACTURERS

Dr. HAUN. Thank you, Mr. Chairman.

There are three real classifications of industrial wastes that I think we are talking about here today.

The first one is that waste which is integral to the production process and essentially is so easily described. Examples of this would be metal chips from machinery operation, perhaps plastic screws and rudders from a molding plant, maybe even, to bring it down closer to home, the bones and other waste materials from a restaurant. This is an integral part of operating a restaurant. You simply have to have a waste product from such an operation.

The second one I will classify as the accidental results of the manufacturing operation. We do not like to think of that a lot of times but

we do have in quality products, mistakes made in the operation. We have startup materials and shutdown materials while the process is under control. These materials can frequently be recycled but occasionally they cannot.

Finally, I think the thing that this particular symposium is concentrating on most is the products that we produce after the consumer has made whatever use the consumer can make of them. When the consumer has decided that it is of no further use to him or her and is ready for disposal, this is the category that becomes municipal waste.

As we look back at the first two categories, I really do not know of any hard numbers on the quantity of industrial waste that is being produced. One reason is that it is so very difficult to define it. Does industrial waste include the millions of tons of steel wastes that are produced from steel mills or is it limited to some other material?

The fact is that nearly all industrial waste is taken care of by the industrial producers. That is not true of very small companies, but most manufacturing operations today do for good solid economic reasons having to do with costs and because they can frequently earn substantial return by the sale of properly classified scrap and wastes have a tendency to have their own system under control.

Just some insight from the food industry point of view, we found it essential to control the disposal of any waste products in one of our food plants. The food safety regulations are very tough and they should be. It is possible, for example, if we have an off-grade product—we had one waste pickup operator who was found to be selling cake mixes that he had literally removed from a garbage can, put it in small plastic bags, and was out merchandising these products. We had to find a way to stop that. We stopped it instantly because we are liable for any damage that might result from that. Most industrialists have to deal with that issue in some form or other.

The products, themselves, what does this consumer do with the product when its use cycle is complete? We believe that the economic incentive for the disposal of municipal waste is becoming as apparent as the economic incentive has been in disposal of industrial waste for many years. We see many examples of the application of cooperative programs between municipalities, private industry, to develop resource recovery and disposal systems for their mutual benefit. These are profitmaking operations in general. They are all real economies to the municipalities. We see this as a growing activity and one that we would like to see fostered by a number of means, whatever means may be available in this society.

We do not think that necessarily massive infusion of Federal money will be necessary, but we do believe that the traditional American approach of finding ways to encourage the cooperation of the public sector and private sector in the solution of a problem of this kind can be worked out.

There are really two approaches that are being talked about. One is the regulatory approach, the regulation of disposal operations and the fostering of disposal plants or resource recovery plants. The other is the so-called source reduction. Source reduction is a code word in these industries. For some, be it the Federal bureaucracy, be it someone else, to decide what is good for the consumer.

I have personally spent a good deal of time in trying to work out with the State of Minnesota a set of packaging guidelines which were intended to accomplish some of the objectives of source reduction. We found it to be a very difficult problem after about 1 year or 1½ years of discussion. We both turned to the courts to get some definition of what the statute meant. Neither of us could really interpret it. It is easy to think in terms of this as "ban the can" kind of regulation without realizing that the distribution systems in this country for consumer goods changed about 40 years ago in an irrecoverable kind of way. They changed in ways that were reflective of a whole variety of concerns.

There were concerns for cost of distribution. There were concerns for the convenience to the consumer, the ability to go into the store and pick from the shelf an item that was priced, identified, properly labeled, and decide that that was the product that you wanted and take it home with you and use it. There were concerns that had been growing for many years over the protection of the consumer. It is difficult for those of us in this room today to imagine the days of the cracker barrel or the container of dried beans in the store that you scooped out your own 2 pounds into a paper bag and so forth, because that is a world that we do not think about any more. I do not think it is possible for us to return to that world in the pursuit of business in this country. In fact, consumer packaging is a very sophisticated, highly scientific, very tightly, highly restrictive type of operation. The fact that we can paint in four beautiful colors a picture of a magnificent cake mix on the box often conceals the fact that about 80 percent of those boxes are made out of recycled newsprint with a white clay coating on them to make them accept the ink. This has been the rule in the food industry for a long, long time. It is a rule in the nonfood industries, consumer goods, for pure economic reasons for a long time.

We say, yes, we would like to see more recycling. I want to point out that there are some hazards involved in recycling. The Food and Drug Administration, for example, will not approve the use of recycled paper goods in contact with food products, so we must use virgin packaging materials in contact with the product that is being sold to the public. We still can use an outer container that is not. Plastics, oils, all of the other more elaborate packaging materials if you look carefully are, in general, being selected for their functional value in protecting the product on its way to the consumer, either to keep it in better functional condition so that it is fresh or able to use it and protect it from infestation from a whole variety of accidents that can occur in the long chain of distribution.

It may be of interest that it is not unusual in today's distribution system and not in control of the manufacturers that a typical product on a supermarket shelf in a dry grocery section, for example, is 3 months old by the time it arrives on the shelf. It is necessary to preserve the product so that it will survive that time otherwise we will be wasting resources, those we are trying to save by restricting packages. I think that is enough of that on preparation at the moment.

I will be glad to hear what the rest of the panel has to say.

Mr. FLORIO. In raising the question of source reduction, perhaps we get into the general discussion. I think maybe someone could give us some information on the experiments that have been tried with some of the States that have undertaken some attempts at source reduction.

The next speaker is Mr. Palmer.

ADDRESS OF PHILIP A. PALMER, DU PONT CO. ENGINEERING DEPARTMENT, MANUFACTURING CHEMISTS ASSOCIATION

Mr. PALMER. Good afternoon. My name is Philip Palmer. I appear today on behalf of the Manufacturing Chemists Association, Inc., [MCA] a nonprofit trade association having 186 U.S. company members representing more than 90 percent of the production capacity of basic industrial chemicals within this country. I consult in solid waste management within the Du Pont Co., and am a chemical and environmental engineer by training.

The chemical industry is vitally interested in the discarded materials problem and its impact on the environment as we produce and dispose of wastes which would be classified as hazardous. I would first like to qualify the word "hazardous" by emphasizing that many materials are potentially hazardous, depending upon the way a material is handled or disposed. A small, sealed and properly identified bottle of potassium cyanide in a chemical laboratory poses a minimal hazard to man or his environment. However, if the contents of the bottle were to be emptied into a drinking water well, they immediately become extremely hazardous.

In the chemical industry, we safely handle on a daily basis large quantities of "hazardous" materials. The important concept to recognize here is that we do not live in a zero risk world. Rather, we must learn to identify risks and manage them appropriately. In this way, we can reduce the hazards associated with these risks to an acceptable level while continuing to enjoy the benefits of an industrialized society.

Turning specifically to solid waste management, it is important to note the wide variety of waste characteristics which one must deal with, varying from mere trash to semisolid bottoms from distillation operations containing from 10 to perhaps 100 individual chemical compounds. Certain of these waste characteristics may be a potential hazard only for specific aspects of waste disposal and not others. MCA believes that existing regulations applicable to containerization, spill prevention, fire protection, employee safety, transportation, and incident reporting would also apply to waste storage handling, and disposal. These regulations provide adequate safeguards for potentially hazardous wastes under most circumstances.

There remains to be addressed, however, the potential hazards associated with the environmental effects of ultimate waste disposal. Here the potential hazard is primarily that of contaminating potable ground water supplies and surface waters. The waste's leachate characteristics, as well as its toxicity, and the characteristics of the disposal site and method, determine the quantity and concentration of waste which can be safely disposed. Site characteristics which are

important include: proximity to potable ground or surface waters; soil percolation rates; barrier characteristics—as a membrane or clay layer; rainfall; leachate attenuation by the soil; method of operating and completing and landfill site.

In the final analysis, disposal site selection, design and operation determine the environmental adequacy of disposal. We wish to emphasize that improper disposal of municipal waste as well as industrial waste can lead to contamination of potable ground water or surface waters, and in this context, both waste types are potentially hazardous.

Consequently, we believe that regulatory emphasis should be such as to require satisfactory ultimate disposal. The thrust should be to set performance standards to control what is released from the disposal site to the outside environment, rather than to restrict what enters for disposal. Because proper site characteristics and operation largely determine the waste's impact on the environment, the ultimate disposer must be responsible for the lawful and environmentally sound disposal of wastes in his possession. We believe a waste disposal permit system enforced by the States under Federal guidelines can best insure proper disposal.

In this regard, we support the thrust of pending solid waste legislation insofar as it recognizes this concept. We are concerned about overlapping authorities, such as exist in the pending toxic substances bill, which would also purport to require regulation, including component testing, of the disposal of a chemical substance. Solid waste disposal should be regulated by specific solid waste legislation.

The waste generator, also, should have certain responsibilities if he is not the ultimate disposer. He should adequately label and describe the wastes so that the transporter and disposer are aware of properties which may be important to safe transportation and proper disposal. He should identify the disposer and determine that the disposer has the proper permits for disposal. However, the waste generator should not be required to obtain a permit for waste generation. There are a number of additional items that I was asked to comment on, but if you would prefer, I will save them for questioning.

In closing, we believe that additional control of the disposal of all solid wastes, including hazardous wastes, are needed. Some degree of uniformity between States would be desirable, but enough flexibility should be allowed to account for geographic variation in climate, geology, and drinking water supply requirements. Regulation can best be accomplished through a State disposal permit system under Federal guidelines.

We emphasize that the generator should be free to decide whether to treat or dispose of wastes himself, or to utilize a privately or publicly operated system, providing all operations are environmentally adequate and satisfy regulations. Regulations set on environmental performance should allow innovation in treatment and disposal techniques. We still have much to learn in these areas.

Finally, as new regulations are adopted, a substantial number of substandard facilities will have to be altered or replaced by adequate facilities. Time will be needed to survey, plan, and construct new disposal operations. To be economical, these facilities must have

rather long expected lifetimes. They may not be adequate in the long term if installed in haste. Although industry is working on waste reduction and recycling, we will continue to produce solid wastes which must be land disposed. We are concerned that we may be faced with a situation in which no facilities will be permitted for use if regulatory deadlines are too short or restrictions too severe. Consequently, legislation must allow time for orderly phase-in of new facilities.

I wish to express MCA's appreciation for the opportunity to participate in this seminar. I hope our comments will help you in your deliberations.

Mr. FLORIO. You talked about one of the areas that I think the committee will have great emphasis on, the whole question of hazardous and toxic substances throughout the country. We are starting to realize that what has been done, we got the landfills in years past and it is coming home to roost, so to speak. In my own area, they had landfull operations with phenol content in waters 2 to 300 times, what is permitted to be contained in there primarily because of the dumping over a number of years of industrial wastes. There is no way of ascertaining what it was that was dumped because there is no inventory system. It is very difficult to ascertain what caused the problems. I am sure that is going to be one of the major committee assignments.

Next, we have Mr. Evans.

ADDRESS OF BROCK EVANS, SIERRA CLUB

Mr. EVANS. Thank you, Mr. Chairman.

I also was going to mention the article which talked about the methane gas problem from the landfill in Richmond; another speaker mentioned it already. I think I would only add to that, as some of us know, exactly the same problem was noted in the papers about a year ago in Louisville, Kentucky—the only point being that these are continuing problems. They are with us again and again, year after year, and are going to get worse. Many of us in the environmental movement have been very concerned that Congress for whatever reasons seems unable to address legislation to regulate the disposal of waste on land, even though this activity is a fundamental part of a resource extration and manufacturing and consumption cycle. That is why we welcome this symposium and certainly welcome the initiative of Congressmen Rooney and Florio to get on with it.

We want to support it all we can and we want to support all of the other groups who are here, hopefully, finally to do something about it.

I want to talk briefly about the environmental impacts of the consolidated waste disposal problem as we see it and suggest a solution to be considered along with the others.

Everyone is confronted daily with some aspect of the waste disposal, yet it affects our life in hidden ways also and has a potential for affecting us much more severely in the future than it does now. That is one of the main things that we are concerned with as environmentalists. Most of us only see an image related to the disposal of municipal wastes. We do not see the disposal of industrial

wastes which are inherently much more harmful to humans and the environment. Improper disposal of these wastes and municipal wastes on land cause pollution of the surface water with a tendency sometimes of the contamination of ground water also, which has been mentioned.

The use of incineration as a means of disposal degrades the air and emits toxic pollutants which have yet to be accurately measured. Often land disposal sites create blight.

The more indirect environmental problems caused by the land disposable waste is that the use of the land for disposal eliminates such land for housing or recreational purposes.

Another impact that we do not often think about is the energy bill for waste disposal activity. Obviously the gasoline bill, the electric trucks that we see regularly must be staffed; we all know that.

The energy cost is staggering for New York to ship to New Jersey, or Connecticut, or New Hampshire for disposal. It is always not well known that one disposal process is the incinerator. Despite the imposition of air pollution control requirements, these fuel demanding giants are still widely in use because of the difficulty in finding landfill sites in some regions of the country. In Chicago, for instance, over 80 percent of the municipal wastes are incinerated. These incinerators burn valuable fuel for no productive purpose other than to dispose of waste. Unfortunately, a major part of the energy bill hidden in our waste disposal activities is hidden in the fact that we dispose of so much material which is a resource and not a waste.

Americans are leading the world in their ability to abandon or to waste items which could be reused or reprocessed into new items or redesigned for purposes they were not allowed to be used in the first place. If we could some how reduce the total amount of goods we buy and discard and redesign goods to last longer and use fewer materials and yet accomplish the same function, the amount of energy and materials would be truely staggering in terms of what we saved. We would save the energy used from the raw materials to produce the goods, collect the goods upon discard and disposal of the goods plus all of the intermediate transportation involved. Of course, we would also conserve raw materials.

Furthermore, if we could reprocess the goods that really have to be discarded to make new goods, we would save additional energy since reprocessing usually requires less energy than starting with raw material.

Of course, the financial impact of land disposal is reflected in the local tax bills which provide the estimated $3.5 billion necessary to collect and dispose of residential and commercial solid wastes annually. We also cannot ignore the indirect cost of cleaning up the pollution referred to above and the problem of the use of land for disposal which could otherwise be put to more productive uses.

I mentioned the crisis before. This is an overused word. The crisis we refer to here involves the terrific growth of these problems to come yet in the future. For example, our media-by-media approach to pollution control has resulted in some estimates that by 1983, we will have approximately 332 million dry kinds of sewage sludge to be generated annually by sewerage waste water treatment facilities. We

could almost double this number to get the real tonnage, of course, which is the wet tonnage. Also, this sludge would be useful for organic properties, a great deal of it will be used with chemicals. If the latter sludge is improperly disposed of, as some of the speakers have mentioned, surface and ground water could be eliminated as drinking water sources.

We should also consider the amount of landfill space that sewerage sludge and municipal waste disposal occupies. This would probably multiply when we come to the industrial sector. It is estimated that industrial production of sludges will be generated at a rate of at least 920 million dry tons per year by 1983. Again, this could double if you get the real wet sludge. The sludges will be much more toxic than sewage sludges and does present an ever greater disposal problem. Leading to ground water in detectable quantities could render actual or potential drinking water useless for use in the future. The dangers posed by the small quantities of known carcinogens is frightening also to many of those who study the subject. I could go on and on about the problem but I think all we need to talk about in addition are the solutions.

As we see it, some kind of measures are needed in at least five major areas of concern.

First, there should be some Federal regulation of treatment, storage, transport, and disposal of hazardous wastes which we define roughly to mean toxic and industrial waste and sewage sludge. This measure is needed to protect the surface and ground water and to protect health. It will provide an incentive to the industrial waste generators to produce the amount of such waste bound for disposal through waste reduction and recycling. Such measures would also have the benefit of a terrific cleanup of health problems which would result in the present and proper disposal activity.

Second, we think there should be some State regulation of municipal waste disposal in accordance with the Federally mandated guidelines. The principal focus of these guidelines should be to eliminate open dumping and to insure adequate land disposal—maybe to avoid the problem we see in Virginia now. I have a feeling that this measure would provide an incentive to all of these waste generators to reduce the amount of waste bound for disposal as a result of the increase in disposal costs which it would probably incur.

Third, we would like to see an extensive research and development and demonstration program for recycling technologies for source separation and source reduction techniques. Ideally, materials and energy recovery technology should be developed and marketed by process manufacturers at their own expense and with their full assumption of the risk for faulty operations. However, since many cities are being enticed to purchase these systems and share some of the risks, we think that the Federal role should be to ensure that the research or demonstrations that these systems are capable of adequate operation without adverse air pollution effects and at a reasonable cost.

We feel that no full-scale system has demonstrated continuous operation and designed for capacity at this time. Cities should not be stimulated to support these systems or any loan guarantee or pro-

gram until further experience is developed with these systems so there is greater insurance that a series of expensive post-construction fixes are not necessary.

Fourth, we feel there should be Federal regulations for products which use an unreasonable amount of energy and materials, perhaps suggest a subject of congressional veto of the regulations if necessary. Unfortunately, the term "source reduction" has been identified with only one concept, that is mandatory container legislation. Although such legislation, in my opinion, has many energy, material, and solid waste benefits, the emotions surrounding the legislation allow many of us to conclude that it should be considered separate legislation and not necessarily a part of a comprehensive solid waste bill where it really properly belongs. The term "source reduction" conceptually provides a variety of other means to control and prevent through the redesign of products, changes in finer consumer material usage patterns. Here, basically, we are referring to changes in product design to reduce the amount of material used per product unit to facilitate product reuse, and increase product lifetime. All of these things are source reduction, too.

We see this as an essential element of bringing the growth and waste generation to a halt and again play hero in curbing energy and material use as well.

Fifth and finally, for our suggested solution it would be a system of incentives for natural resources conservation. The cost of collecting, transporting, and disposing of municipal solid wastes are not really currently reflected in the market prices of those products which enter the municipal waste stream. The exclusion of these costs from market prices amount to an invisible subsidy for the manufacturers of such products. Since these costs are paid largely by local governments responsible for handling the solid wastes, consequently there is no incentive for the manufacturer to substitute other materials for use of present materials in his process in order to reduce prices.

A disposal chart system such as are found in the preliminary staff suggestions of the Solid Waste Utilization Act replace a weight-for-unit-base chart on the manufacture of a product based on the cost of handling such products in a municipal solid waste management system. Such could be proportionately reduced to the product producer, consumer waste, and manufactured product. There are a lot of other intriguing ideas to explore here, but due to time, that will do it for the time being.

We tried, however, in our remarks to outline the nature of the impending solid waste management and land disposal crisis. The measures will be prescribed and are comprehensive. They will require, we know, the cooperation of institutional, economic, and societal exchanges. Without those exchanges, I believe that efforts to prevent this crisis, that is the crisis of the tremendous impending growth of the waste disposal problem, will be doomed.

Although the public outcry for legislation on other issues is a lot louder than the subject we are talking about today, we feel that the time to effectively deal with this impending solid waste management and land disposal problem is right now. Water and air pollution control facilities installations are rapidly eliminating the

needed flexibility in disposal operations. Current institutional and technical considerations do not include solid waste management issues. Major environmental planning efforts required by the air and water legislation are taking place now and will be completed before too much longer. Major health and environmental problems can be avoided in the future if action is taken now.

Questions as to how future energy needs are being met now may offer an environmentally less-damaging alternative. The economic flexibility to meet resource needs and establish new resources exist right now but it soon may be disrupted by shortages.

All of these factors, in our opinion, provide a reason for Congress to comprehensively address a solid waste management problem right now.

Thank you, Mr. Chairman.

Mr. ROONEY. Thank you.

Our next and final panelist will be Dr. Rocco Petrone, director of the National Center for Resource Recovery.

ADDRESS OF DR. ROCCO PETRONE, DIRECTOR, NATIONAL CENTER FOR RESOURCE RECOVERY

Dr. PETRONE. I am pleased to appear before you on behalf of the National Center for Research Recovery. The national center was formed in 1970 by a coalition of industries and labor as a nonprofit research organization to seek solutions to the problem municipalities face in solid waste disposal. The center has been pursuing the field of resource recovery from municipal solid wastes for over 5 years.

I would like to share our respective gain over this time period by being involved with a wide range of educational, technical, tested evaluation, and demonstration programs.

Resource recovery might be considered as an idea whose time has come. It is an appealing concept. It satisfies our awareness of the need for conservation. It goes hand in hand with our desire for environmental improvement. It is a domestic source of supply of ultimately depletable raw materials for industry. For the cities plagued with waste disposal problems, it greatly reduces the volume and weight of the discard that must be ultimately disposed of in some manner.

Not too long ago, there was no widespread concern toward either conserving energy or tapping new energy sources. There was no general understanding of long-term raw material shortages. Then solid waste was what it always had been, the negative but necessary by-product of human activity. The responsibility for its management and disposal was essentially a local jurisdictional responsibility.

The solid waste problems of the 1970's are only worse by degrees from earlier decades and generations; but in this decade, the public perception has changed. With it, the climate for recovery.

From the technological standpoint, the national center is involved in two primary areas. The first is a powerplant operation here in the District of Columbia called the Equipment Test and Evaluation Facility, or ETEF for short. Participating with us are the District government, a number of companies and associations, and the Environmental Protection Agency which is supplying great assistance for

some of the work in energy and material recovery. ETEF is a unique pilot laboratory where recovery unit processes have been tested with municipal solid waste. Another major effort is the New Orleans facility where the center had been working as a partner with the city of New Orleans and a private company, Waste Management Corp., to design, build, and operate a full scope materials recovery plant to handle 650 tons per day of municipal solid waste. The center's role had been to obtain market commitments for the recovered products and to design the materials recovery flow. In addition, they are providing engineering manpower and $1 million of a loan grant to fund a portion of the recovery line. Initial operations are to begin in May 1976 with recovery of ferrous, aluminum, glass, and paper from the waste stream to follow later this year.

Time limitations do not permit me to elaborate on our educational and technical assistance program, which in many ways I consider as important as our technological and demonstration efforts in achieving the national goal to help narrow the gap between the promise of resource recovery and its realization of recovery plants in our municipalities.

Thank you, Mr. Chairman.

Mr. ROONEY. Thank you, Doctor.

That concludes the opening statements by our panelists I believe. I thought now we would like to have a little dialog as to whether or not you think this problem could be resolved say within the next 5 or 6 years. I would like to ask our Deputy Administrator of the EPA, Mr. Meyers, to make a response to that question and whomever else wishes to participate.

Mr. MEYERS. I think it is clear that with some new legislation the problem can indeed be addressed and resolved within the next 5- to 10-year period. Just to point that out, the attractive alternative of resource recovery systems is constrained in part because of the need for new legislation. That is, as long as there are cheap options such as the inexpensive dump, there is really no way that material can be diverted to a resource recovery plant. It is an economic kind of thing. If the people who are hauling garbage can dispose of it cheaply by virture of landfilling it, they will not bring it to resource recovery systems. If we had a permanent program that was enforced by the States for both municipal and hazardous waste and I am really pleased to mention to Mr. Palmer and Mr. Brock Evans that the kinds of things that they describe are exactly the kind that EPA are proposing. They are not all proposing to regulate the source of waste but rather the labeling, transportation, and dump site; so that for a change, industry and Government are saying the same kinds of things.

I think it is very clear that with new legislation, particularly in the area of relatively modest regulatory programs the problem can be addressed and can be solved if not in the too distant future.

Dr. HAUN. Mr. Chairman, may I comment on that?

Mr. ROONEY. Yes.

Dr. HAUN. First: I agree very much with Mr. Meyers. We would like to see environmentally sound standards of solid waste disposal at sites, landfills developed and effectively enforced. We do not think it is good for us or for the country. In fact, there are cases in which

ground water is being seriously polluted. It ought to be stopped. We are not supporting that kind of activity in industry or anywhere else, I do not think. I think it is worth commenting that one of the difficulties of a problem like this is that it is extremely complex. I am sure that it is the problem which will ever be solved.

What we are doing is developing a new process in this society which will address itself to a situation, a factor, characteristic of our society. If we learned anything from the Environmental Policy Act, it is that nothing is certain. EPA forced us to look at the interrelationship of air. We could argue about whether it is effectively doing that ourself, but I am not going to get into that.

The fact is, it makes us look this complexity in the face and say, we do not have a problem: we have an infinity of problems, each one of them which has a solution for its time and its place. We have to somehow develop a process rather than look at this at one time in a problem-solving context.

Mr. MEYERS. I would agree with that. To quote that old Chinese proverb: "A journey of 1,000 miles starts with the first step." I think both Congress and the executive branch of Government are well aware of the kinds of things we are talking about, but if one were to wait for this overall comprehensive plan that would take care of everything—first, it would never happen. As you pointed out, the National Environmental Policy Act mandated the kinds of studies in the past that were never done. Having started to do them, each time you resolved one promptly you find another one. That does not mean you cannot start looking on, no.

For example, every major manufacturing plant used to have its incinerator. Incinerators which will meet the Clean Air Act requirements with reasonable economy compared to other means of disposal are no longer available, so we have increased the amount of industrial solid waste. That is fine; that is a matter of national policy.

All I am saying is that the problem is on the way in many ways. There is a new ethic developing in society, there is a new process developing in society and Dr. Petrone's organization is responsible for some of this. The Sierra Club environmentalists are responsible for some of it. We need to encourage what is happening as well as support it.

Mr. ROONEY. I would like to ask one final question. You said we are going to need new legislation. Do you mean new legislation dealing with monies, or do you mean new legislation dealing with the Federal land policy, or both?

Mr. MEYERS. I think the primary thing we need is Federal legislation dealing with land policy money; that would be nice.

[Laughter.]

Mr. FLORIO. Let me just follow up and ask if that means that what we are doing is in a sense having more restrictive land policies toward the end of forcing the issue, saying that if the landfills are no longer going to be available, are we talking technically about saying, well, then that is going to build public pressure to deal with the problem? Are we saying in and of itself, we have to deal with the land policy?

Mr. MEYERS. I am not talking about land policy in terms of national land use. I am talking about land policy with regard to dis-

posal on the land. Other speakers have talked before about the fact that the air pollution regulations and the water regulations have mandated the removal of certain pollutants from the air and water. That material lands upon the land as the last place to go.

Mr. FLORIO. My point was, are we talking about a need for a new land policy with regard to sanitary landfills? Because of the substantive problem, I am sure the answer is in part, yes, but is there not also some argument that that is going to be the way we are going to force the country to deal with the problem of recycling and cause the country to deal with the problem of resources?

Mr. MEYERS. Exactly! Once you close the so-called "chief option," then relative cost of resource recovery drops.

Mr. FLORIO. Yes.

Mr. PETRONE. A point I would like to make on that—the evaluation of whether or not the city will undertake resource recovery has to be faced on an economic basis. If then the cost of handling the waste in terms of landfill, leachate control, and such things, would make that more expensive, that goes into the equation and helps tilt the finances in terms of going to a more expensive way which is resource recovery, but should provide the benefits to protect our environment, recycle these materials, and hopefully establish a new market which I think would take some years to do. Anything that can be done to force it in that direction such as a land policy which would make resource recovery more interesting because of the cost of the landfill would help this cause.

Mr. BEALS. Mr. Chairman, I think that those of us who work in cities are on the receiving end of all the Federal mandating costs are not quite so content to not worry about the financing of these kinds of changing standards of waiting for the markets to develop over the indefinite future for recycling the materials. I just want to underscore the fact that the issue of mandating costs is a very real one for cities. The Congress and the executive branch of the Federal Government have proposed and enacted laws without a full understanding of the consequences upon those who are on the receiving end of them for implementation, that is, the local Mayors and councils that have to set local progressive property taxes to finance many of these services. Hopefully, the Congressional Budget Act through a couple of provisions will require us to look at this issue of mandated costs. I think we would not be satisfied if we see the need for additional standards, certainly improved procedures, and so forth, that we have all talked about here. But they cannot be discussed without some assessment of the impact upon those who have to implement those policies.

We are long overdue in this country at a time in which the Washington policymakers looked at the local taxpayers, essentially a recessive tax base. We think it is an appropriate time to look at the Federal role and financing of some of these mandated costs using the progressive income tax and the source of that to balance off these policy objectives that I think we all agree is desirable.

Mr. FLORIO. Accepting the validity of a good portion of what you say, I was just wondering if the leading municipalities or the leading counties have taken any formal position with regard to regionaliza-

tion, desirability of having municipalities going into regional units for collection or perhaps disposal.

Mr. BEALS. Yes, we do. As a matter of fact, we support that. As was pointed out by Dr. Savas, there is a point at which you determine an efficiency in terms of approach. We think that a very strong policy encouraging mutual development would be helpful. Part of my point for a national action program deals with specifically setting up machinery that provides the regional approaches with the appropriate involvement of local policy, especially in the development of regional projects. I was suggesting a variation of section 208, quality process, as one that we think is worthy of being included in this field as well.

Mr. FLORIO. Does anybody have any thoughts with regard to the desirability or lack of desirability of national standards with regard to operations of sanitary landfills? As I made mention before, there are no standards in my State and in other States for keeping a basic inventory as to what it is that is dumped in the landfill as industrial waste. We thought this was in some way infringement upon federalism, or if you felt this was something desirable?

Mr. PALMER. I would like to speak to part of that question. I think New Jersey is one of the areas that brought this out. We are concerned that there is some uniformity from State to State. Uniform regulations are not adopted and certain States will try to enforce much more difficult regulations solely for the purpose of preventing wastes from being disposed of in that State. There must be some way to even out the situation. Otherwise, once they get on very strict regulations, a neighboring State is going to be forced to taking its own plus that State's waste. It is not going to like the situation and will adopt regulations which are even more stringent. We could get into a situation where there would be an escalation and there would be no place to put the waste. Uniformity needs to be in two ways. One way which would even out the standards from State to State.

Mr. FLORIO. Just to give the other side of the coin, there is a distinct possibility that the State may be inclined to reduce standards as well as part of the competitive effort to bring industry to the State. Where we are fighting about the clean air, clearing it is less attractive talking about a State as a landfill capital.

Mr. PALMER. I have not seen too many communities or States willing to do that though.

Mr. MEYERS. There are some extant examples, particularly in the realm of its waste disposal. There are some six or seven States that have adopted regulations. What comes to mind is the State of Texas. Shortly after their regulation went into effect, one could see the overflow in the States of New Mexico or Oklahoma. I believe they then started the wheels rolling to curtail flow into their States. It is not very likely that States are going to volunteer to be the receptacle of the Nation's trash voluntarily.

Dr. SAVAS. I just had a comment. We know that a lot of designers have taken many different factors into designing package products and so on. Do you think it is possible to encourage and what kind of action is necessary to encourage the product designers to take into consideration ultimate disposal of the product and designing prod-

ucts for recovery? It seems to me that there are many aspects of product design which can be taken into consideration. How do you recover a product after the initial consumer has used it? Do you have any thoughts on that?

Mr. HAUN. I think the kind of dialog or the kind of discussion that has been developing on the subject of solid waste has already had an effect on this. Having spent 12 years in research and product development myself, it is pretty hard to describe that problem. In general, there is no individual product designer involved in the development of consumer products. That may not be true, but in many cases it is true. Really the product climate created with an organization says these are things you should take into account in the development of products. Consumer goods designers focus on utilities to the consumer to the exclusion of everything else because this is the only thing you have to sell. I think that the reception of disposal problems has begun considerably to creep into the design process, the thinking process. As I see it, we began to show up with instructions on our packages, for example, that say how to dispose of this container when it is exhausted and these type of things. The consumers feeling back to us is, yes, we would like to know what to do about it. I think we do need to sensitize the people in product development and make them aware more and more that this is a problem. I think managements are doing this but we need technical societies and professional societies at the same time.

Mr. MEYERS. May I say something?

Mr. FLORIO. Yes, sir.

Mr. MEYERS. EPA has worked with a number of industry organizations in the past on what we call a voluntary waste reduction. There is no mandatory law in that arena. We found there were very many industries who are not interested in just talking and will do something about the problem. We worked with a container manufacturer who put out a 1 pint container for milk. Working with them, they reduced the material content by some 30 percent by redesign. That, indeed, was waste reduction.

Another very minor example of that was reducing the size of a 12-inch straw to 10 inches. There are things you can do.

In many cases what you do is both environmentally sound and economically beneficial. Only in those particular cases, industry is perfectly willing to work with us on a voluntary basis. It is very difficult to integrate the concept of disposal costs into the pricing of the product. A manufacturer, I think, feels this way about it. If you impose that cost on the manufacturer as a fee, then it comes to the consumer as a hidden increase of the price which the manufacturer cannot explain satisfactorily. It is easy to overestimate how well the manufacturer can communicate with consumers. There are some ideas that you simply cannot get across. You cannot get people to buy a product if they don't want it the second time. You can get them to buy it the first time, not the second no matter how much advertising you spend.

If there are going to be disposal fees, it seems to me it ought to be right out in the open. If you buy this product then here is a tax on it.

The tax ought to be separately stated like a sales tax. We do this in Minnesota for automobiles. If you buy an automobile, register the title, you pay a $50 fee at that time for the disposal of the car at some distant time in the future. My notion of that is not such a bad idea.

Mr. HAUN. Fairly rational.

Mr. MEYERS. Because on the other side of that coin, is the cost to local communities for disposing of the waste. The national average today for collection of disposal is some $26 a ton which is not reflected in the price of the product and probably should be if you were advocating that the way to do it is merely by saying, the price is 10 cents plus 2 cents for getting rid of it. That is fine.

Mr. HAUN. I just think as a general principle, the government ought to be responsible for what cost it is imposing.

Mr. MEYERS. I agree wholeheartedly.

Mr. EARLY. I have been working with Mr. Evans on environmental action. Environmental action has been with the Sierra Club on this management area. As you noted and Mr. Evans, Environmental Action also endorses the concept of the product charge.

Mr. Haun, you seem to indicate that this could be made acceptable. Am I understanding you correctly, if the charge were somehow communicated to the consumer?

Mr. HAUN. I am not advocating; I am saying that if it is imposed that it should be imposed right out in the open as a clear cut charge to the consumer for the privilege of the use of that product.

Mr. FLORIO. As a practical matter, that seems to be effectively advocating that. Certainly I am not aware of the economic problems we have of any support that is going to result from that type of proposal. I was wondering if some of the friends of the proposal really are friends of the proposal exercising the prerogatives of chairman and dealing with things that I am interested in.

Mr. MEYERS. One advantage you would have would be to encourage the use of recyclable materials which would not be taxed, for example.

Mr. FLORIO. The point I was making would be to have it enacted in law. It would be somewhat difficult if, in fact, you are going to advertise—The whole thrust behind the cleaning up of our environment is now going to be tacked on as an added tax. I would assume that you would perceive that the opponents in the whole movement toward solid waste disposal are going to talk about the Ford tax or whoever is going to be supporting it. I just bring what I think is a realistic consideration out to you.

Mr. MEYERS. I would say that you are probably right.

Mr. EARLY. I think that probably is a problem. But on the other hand, consistently, opinion polls that have been taken indicate that the electric industry supports the concept of paying extra in order to achieve pollution control. Although one's gut reaction is to the political and popularity of this, maybe it is true that one has to try to identify from whence the political opposition is coming—industrial sources, or whether it is coming from the cities. The cities seem to endorse a sort of need to alleviate themselves from financial burden. This clearly could provide a means of doing that if the funds that were collected were returned to the city to help collection and dis-

posal costs. It seems to me that an effort has to be made to try to identify where the critical opposition is coming from.

Mr. FLORIO. Not to beat a dead horse, but just to make a point, it seems to me that if we are going to address this as a national problem, it probably should be addressed, particularly, with regard to the financing proposal in a more aggressive problem going to the general tax cut rather than talking about a fairly nonprogressive means of financing it going to consumer products. I think you are talking about an amount of money that is going to have to be raised. Ultimately the taxpayer has to pay, but it is a matter of which taxpayer? When you start talking about consumer product add-ons, you are talking about, in a sense, almost a sales tax.

Obviously the purpose of this is to bring things out. I think that brings out the different approaches that have to be discussed if the purpose is to incorporate the cost of consumption. It costs just as much to dispose of an empty package from a household income of $7,500 a year as it does to dispose of the same package from a household with $75,000 a year.

Mr. FLORIO. If we are talking about an add-on to finance the cost of that, the family that makes $7,500 as opposed to the one that makes $75,000, that is a larger proportion of their income which inherently is a progressive system.

Mr. EARLY. The family that is making $7,500 would have an option of buying a product that is made from recycled products and not getting this tax; they will be allowed to do so.

Dr. SAVAS. One basic principle of equity here would be that the person who derives the benefit should pay the charge. If the individual consumer throws a can away that costs, it is reasonable. One method of assigning costs is that that person bear the charge. I think that a single principle as the breakdown of costs ought to be internalized one way or another. No one knows how to internalize it. One approach is to add it on at the end; the other approach is to preload it on to the beginning. In manufacturing, for every pound of aluminum that is used impose a disposal tax, or use alternative methods which arrive at the same economic process.

Mr. FLORIO. Can I ask a question? With regard to sludge in the city of Philadelphia as a good example of an area, I am not generally sympathetic to their plight too often, but in this case I think they really have been handled rather badly. They were burning this sludge. They were ordered by EPA to discontinue because of the air pollution. They then attempted to dump the sludge over in the landfills of New Jersey and, as was indicated, they were brought to court to stop that. They are now dumping it in the ocean and they have been sued by a number of individuals and organizations. What would the gentlemen suggest with regard to sludge disposal?

Dr. SAVAS. The problem is a part of a large economic problem. Everyone wants us to pick it up; where do you put it down? As a matter of fact, there is no shortage of land in the United States. It happens to be politically difficult to get a site for a disposal site. There are certain expenses involved in making it an environmentally acceptable kind of disposal facility.

Given the realities of that kind of decision about what to site; whether to site a disposal facility? It has to be moved upstairs in

decisionmaking chairs. The city of Philadephia cannot condemn land outside the city of Philadelphia for disposal facilities. Those kinds of decisions have to be made at a higher level. The State is perhaps an appropriate level to do that. There is always brought up the historical problem—we are running out of land for disposal now; we are running out of conveniently acceptable land that everyone will agree to use for disposal sites.

Mr. FLORIO. Has anyone heard of the use of sludge as a fertilizing product?

Mr. MEYERS. Yes. I should say that the sludge problem is one that has returned to EPA. As you know, one of the greater agency programs is construction of waste water treatment plants over the next several years. We expect a marked increase in the production of sludge as a result of that. We have a large number of programs addressing the problem as to what do you do with it. We are now looking at methods of beneficial use of sludge, mostly as a land conditioner, fertilizer. There are some studies going on that would mix it up with animal feed and utilize it that way as well. But for large cities, like Philadelphia and Los Angeles, in the Los Angeles area two of the three counties, one is still ocean dumping and two of them are selling off fertilizer. There are some problems with regard to the content of sludge if there are heavy metals in it. It becomes difficult to apply over crop lands. We have a number of programs going on now where the sludge is being used to condition soils for the growing of turf, for example, park lands, et cetera. I believe there is a whole load of it going on Constitution Mall.

It is an area that is of concern to us and we are working on it. There are ways it can be beneficially used now with some discretion.

Mr. EARLY. I think the sludge problem is a classic problem in terms of the difficulties that have been created by media approach. Mr. Meyers is involved within EPA with certain media by media, a jealousy, shall we say, in that the water program which is primarily responsible right now for issuing waste water treatment grants is not at all responsive to the concerns that are being voiced by the Office of Solid Waste management programs with regard to the heavy metals sludge and exactly what is done with the sludge that is generated by these facilities for which Federal funds are paying. It is a classic demonstration of how much more has to be done in terms of dealing with the environmental problem on a comprehensive basis and not on a media-by-media basis.

Mr. MEYERS. That is no longer true. I do not know if you have heard, but that was a problem that was recognized by the management of EPA and several months ago as a matter of fact, I believe in January, the Deputy Administrator assigned to the Office of Solid Waste the responsibility for sludge management for the entire Agency. It is one of the few times that we have come across program lines. It is an intra-agency problem and is being treated that way.

Mr. FLORIO. We assured the men in here that we would be out by 5:30: we have been here for approximately 2 hours. We were supposed to have a 5-minute wrapup but the introduction was substantially longer than 5 minutes.

I would ask if there is anyone who would like to make a brief statement, a concluding statement?

Sir, you are restricted to 1 minute.

Mr. MEYER. I would just like to make one point and that is, while I doubt if there is anybody in this room that has been in legislation more than I, I think it would be misleading for all of you here to assume that nothing is being done. There is a good deal of work going on now in the existing solid waste legislation in the area of technical assistance to communities. We have a rather large and extensive resource recovery program. We have under development guidelines for guidance that we issue to State and local governments to give them the kind of information that they need to dispose of things properly. It is advisory rather than regulatory but there are things going on. It is not completed. We need a lot of help but there are things going on.

Mr. FLORIO. Yes, sir?

Mr. HAUN. Just briefly—it seems to me that the problem with cities is that the people will not vote for taxation to support the kind of programs necessary to dispose of this problem. People will not vote for taxation for the level of services. There is a tendency to say the thing to do is to fund it out of income taxation. The local voters do not have to be involved in making the decision. To me, that is very dangerous. If we are going to talk about incorporating externalities, we have to find a way to make the people who make the decisions in this country, and still keep the individual citizens aware of what we are doing about the problems.

Mr. PALMER. I have one last comment. When we get to the point of having a new regulation on land disposal, very obviously there will be a considerable number of land disposal sites which will be inadequate according to the regulations. New ones will have to be provided, a substantial number of new ones. My only plea is that the legislation allow an adequate time frame to phase in the new facilities so we are not caught in a situation where there just is no place to put our solid waste for a year or two.

Mr. FLORIO. Thank you very much.

I would like to take this opportunity to thank everyone who participated today and invite the members of the audience and everyone else to attend the second portion of the seminar which will be conducted this evening at 8 o'clock, same place. This is entitled "The Federal Role in Resource Conservation and Recovery."

Among other people, we are going to have Mr. Russell Train, the Administrator of EPA.

Thank you very much for coming.

[At 5:35 p.m., the first session of the Symposium on Discarded Materials adjourned.]

The Federal Role in Resource Conservation and Recovery

SESSION 2—8 P.M.

Mr. Rooney. The committee will begin tonight's session of the panel. I might say this afternoon we had a very interesting dialog on the problems of resource conservation and recovery.

We are very happy tonight to have some very distinguished panelists here tonight. The subcommittee is honored to have the leading Federal policymakers in the solid waste area to discuss the role, if any, the Federal Government should take in resource conservation and recovery and discarded materials.

The panelists will discuss the Federal role from four different but totally related positions, those of regulations, research, materials recovery, and effects on and by American business.

It is hoped that the discussions we generate this evening will illustrate not only the benefit of the Federal involvement but also the risk of such involvement which could dampen the initiative of private enterprise.

Mr. Russell Train, the Administrator of EPA, will be asked to focus on what role, if any, the Federal Government should play as a regulator of the discarded materials problems.

Mr. Robert Seamans, the Administrator of the Energy Research and Development Administration, will be asked to discuss what the Federal Government is and can or should attempt to do so as to develop various forms of energy from discarded materials.

Mr. Thomas Falkie, the Director of the Bureau of Mines of the Department of the Interior, will discuss discarded materials as an urban ore that contains ferrous and nonferrous metals capable of being recovered.

Dr. David Chang, Deputy Assistant Secretary of Commerce, will be asked to discuss how the Federal Government can best shape any regulatory or financial assistance authority so as not to discourage the initiative, interest, and investment of the business community.

Other topics will be discussed this evening such as how a Federal program should relate to the States and local governments, the type if any, of Federal financial assistance that should be authorized, and should all energy conversion from discarded materials research activities be in one Federal agency, will also be addressed.

I personally thank you for being so generous with your time and I hope the cooperation that you are sharing tonight will continue so that we can resolve this most urgent problem of what to do with discarded materials.

I appreciate the time you have given to this committee this evening. We hope that we can resolve this tremendous, urgent problem that deals with the problems of discarded materials in our country today.

I will call on our first panelist, the very distinguished Administra-

tor, a gentleman I have had the pleasure of working with for many years in Congress, Mr. Russell Train.

Before I present Mr. Train, I would like to call on my very distinguished minority colleague, Mr. Skubitz who has contributed so much to this committee.

Mr. SKUBITZ. Members of the panel and ladies and gentlemen, last July the chairman and I met with the members of our staff and decided to attempt the passage of an omnibus railroad bill.

At that time, many of our friends in the Congress suggested our approach at the time was rather ambitious but after months of work, the President signed into law on February 5 the Railroad Revitalization Act of 1976.

Shortly after that, the Chairman, Mr. Rooney, and I again directed our staff to begin work on an omnibus bill to fully address the problems associated with solid wastes. This time, neither the chairman nor I could guarantee the same end results as we had in the railroad legislation.

However, this symposium represents a step in the process toward meaningful legislation. The symposium has already had one beneficial result. It has brought forth a number of parties who have a vital interest in what their Government does to encourage the proper disposal of discarded materials.

This afternoon, at the first session of this symposium the size of the problem was spelled out facing the Congress in getting rid of garbage, trash, junk, and industrial wastes.

Tonight I am anxious to hear the members of our panel discuss the various roles that the Federal Government might play. Up to this time, the role of the Federal Government has been extremely limited.

The solid waste disposal initiatives had really only scratched the surface of what can be done. Basically the Waste Control Act provided some useful demonstration projects and the Administrator of EPA was authorized to issue guidelines.

I, for one, do not envision a multi-billion-dollar Federal program to provide every community in this country with a modern disposal plant. Unfortunately, today, however, everybody seems to look to Washington for all of the answers.

In my opinion, there is not a business in this country today that does not have more Government than it can handle already, and often, too much more than is necessary to reach our objective.

What I am trying to say, my friends, is that in my opinion, the role of Government should be limited to what Government can do best, and its powers and with the money that the taxpayers provide.

I think our job is to help prime the pump and let private enterprise working with the communities take over from there. The Federal Government, as I see it, can only act as a catalyst.

It seems to me the solution to our problem can only be found through a partnership arrangement in which the community and industry working together with the Federal Government search for the final solution.

The purpose of this symposium is not to lock anybody's position into place. It is simply an opportunity to provide all of us with materials necessary for meaningful legislation.

Mr. Chairman, I look forward to this discussion and I know the audience does too. Thank you.

Mr. ROONEY. Thank you, Mr. Skubitz. I will now recognize the distinguished Administrator, Mr. Train, who has done so much for the environment of this country.

STATEMENT OF RUSSELL TRAIN, ADMINISTRATOR, U.S. ENVIRONMENTAL PROTECTION AGENCY

Mr. TRAIN. Thank you very much, Mr. Chairman, Mr. Skubitz, I would like to start first by expressing my appreciation to you Fred and Joe for your leadership in calling this symposium together and chairing it.

It is addressing an issue which I think presses more closely on the budget and concerns of local governments around the country than almost any other on the public agenda. I think at this time exploration, I sort of welcome Joe's statement that none of us here are here to get locked into positions, I think we are probably long on positions in Government and probably short on solutions.

I think it is really a great opportunity for all of us to explore openly, informally and freely these very important issues. I cannot help but recall the last time I was in this auditorium.

I was out there rather than here about 30—it was about 30 or 45 years ago with the chamber music recital. This is slightly different from that, I remember being bored to death. I was fairly young in those days.

The EPA in its relation to this whole field has had a key role since its inception. The office of Solid Wastes Management, as you know, was part of the original creation of the agency in late 1970 by reorganization plan and took over the functions and programs of the predecessor of EPA and HEW.

The history of EPA involvement in this national environmental need goes all the way back. We give it an exceedingly high priority in the Agency, and would welcome working with your committee on the problems.

You have provided a great deal of leadership for all of us in that regard. If we address the overall problems of residuals management, I think that is probably what we are dealing with across our society, we have to go along with that.

As part of that, we have to share a concern for resource conservation and likewise for energy recovery. I think that as we address many of these issues and Bob and I get into these tonight, in both aspects of the problem, those aspects of the problem are very crucial to keep very much in the forefront of our concern.

Particularly, I would say at the present time, the energy recovery aspect of the problem is of interest. I will try to be reasonably brief, Fred, if I may.

Mr. ROONEY. As a panelist, Mr. Train, each member of the panel has 8 minutes.

Mr. TRAIN. I think I probably ought to use mine. It starts now.

Mr. ROONEY. You were eulogizing. [Laughter.]

Mr. TRAIN. Let me very quickly hit a few key points. The problem is increasing by leaps and bounds every day. It is of increasing

urgency in our society and to our Government. I would say that very plainly many of the responsibilities of the Environmental Protection Agency are helping to increase the problem.

As we regulate disposal in various mediums, if it is air or water, ocean dumping and another example, we are increasing the pressure on the use of other alternatives which all too often have been on the land.

Likewise, many of our pollution abatement technologies produce their own residuals as in the case of sewage sludge and sludge from various sulfur oxide scrubbing technologies which to add to the Nation's solid waste problems.

I think it only fair to say that we are not only involved in solutions but also involved at the other end, we are part of the problem too and perhaps give this a particularly valuable perspective from a systems standpoint.

The whole problem—not only are we part of the problem in this solution, but each of our areas of responsibility such as air and water quality are severely impacted by the help of municipalities, of industry, of agriculture to dispose of solid waste.

These efforts likewise add to our other problems. There is a need in our view for some regulatory approach in this whole area. I think you may want to talk about this, particularly the area having to do with waste.

I think the industry very widely would welcome this in order to help bring what is an increasing problem under more uniform control. However, with that, I think that the crucial need is a working relationship, not a regulatory one, with States and communities.

In that regard, I particularly welcome Joe's plea for a partnership with State and local authorities. I think that is very much what is involved here. I think that EPA does not seriously feel problems in the Federal Government is one of pouring money.

We obviously need resources, sure, and doubtless we would like to have more than we have, but it is not a matter of pouring money on the problem, it is a matter really of working on institutional problems, or market problems, on technology exchange opportunities in a partnership fashion.

This can be done in a cooperative fashion. I think that should be very much the theme of what we are after. I think there are meager opportunities in terms of working with citizen groups and industries and State and local governments through a well-designed technical assistance program of that sort.

Obviously we feel that one of the things you ought to talk about are some of the organizational aspects. We feel EPA out of its experience and great background in this field which should be capitalized and built on.

We recognize the appropriate role of other agencies. We have people represented here tonight and very importantly, ERDA. We also have right on down the line tried to develop that kind of effective working relationship within the Federal Government.

It is not always easy, I might add, as you might know. I think we have been making a good deal of progress in that regard. Beyond that, I think you might want to explore the appropriateness of

incentives in this area because regulation is, I think, part of the solution, technology exchange in the system, but also market constraints form an often imposed, significant road block to effective resource recovery and resource conservation and energy recovery, that there are possibilities for incentives, removal of discriminatory systems and the provision of some appropriate tax incentives which I think should be explored.

I am afraid I have gone over in minutes but that is a beginning.

Mr. ROONEY. Thank you, Mr. Train. We will now call upon Robert C. Seamans, Administrator of the U.S. Energy Research and Development Administration.

STATEMENT OF ROBERT C. SEAMANS, ADMINISTRATOR, U.S. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

Mr. SEAMANS. Mr. Chairman, Congressman Skubitz, I very much appreciate the chance to meet here with this panel and with you. I will discuss first of all the importance of conservation and second, the importance of utilizing waste material, for the purpose of generating energy.

We at ERDA have carried out a variety of analysis of what various alternatives we have in this country to improve our posture to bring our supply and demand into closer equilibrium.

Certainly to avoid a divergence where the demand increase is dramatically over our supply. On the basis of these studies, we have placed conservation technology at the highest priority categories of research and development, not necessarily by ERDA only but by ERDA, other agencies, private sectors, as well as State and local governments.

We believe this is important not only in the near term but also for the mid and long term. Just to give you a number, it is our view that we take all reasonable avenues to conserve in the next 25 years.

By that, I am really talking about using technology to do things more efficiently that we can save on the order of 20 million barrels of oil per day by the year 2000. We are talking about very, very substantial savings that can be made possible.

In this category, comes the reuse of what we now call wastes. Our country is absolutely profligate in the way that we waste materials that come out of our municipalities, out of agriculture, out of our forests, our industry.

We have on the order of 1 million tons of wastes of all types each year. Not all of this is really recoverable but certainly on the order of 200 million tons can be recovered. This is of the order of 500,000 barrels of oil a day that we believe could be recovered by 1985.

This is obviously something that is well worth pursuing. As a matter of fact, we believe it is essential. A few of these, of course, are from the standpoint of helping out in the energy field.

Of course in the process of doing this, we also will ease the disposal problem. I believe it also can be done to ease the environmental problem so this ties it in very closely with the responsibilities of ERDA as well as the Environmental Protection Agency.

Another question is what kinds of programs do we have today. We have two categories of projects in ERDA. They are all really quite modest. They all involve cost sharing, one way or another. We have this on the order of $1.7 million and next year, recommending to Congress, about the same amount in the field of straight conservation.

This is an area where we are working on a variety of groups to see how we can for example, develop gas methane from solid wastes sewage projects that we have at Pompano Beach, Fla., and there are long lines of projects such as this that are trying to make these conversions.

We also have what is called a biomass conversion. This is where solar energy is utilized in a conversion process, part of our solar program. This accounts to the order of $4.5 million this year and this is the amount recommended for next year.

The programs that we have of an R. & D. nature, we believe should be augmented by some semi commercial ventures. They are in the bill currently before the House Science and Technology Committee.

That would involve loan guarantees for the development of synthetic fuel. In this area we contemplate plants for the use of shale to bring shale over to synthetic oil. We have the use of coal converting over to gas and we have a projected 5 or 6 projects in the biomass area, each planned on the order of 6,000 barrels equivalent per day.

These plants will be expensive. The biomass plants will cost on the order of $100 million per plant or so. It is our view that at least one of these should be tied in with some municipality.

We would not in any way envisage the financing of it, the plan envisages the use of loan guarantees to provide the financial support that would permit the funds to be raised privately.

I might say this bill was passed as an amendment by the Senate to our authorization bill last fall but the total was for $6 billion and the current bill is for $2 billion and is currently under review by the House Science and Technology Committee.

In closing, the question is what is the relationship between our various agencies and the relationship between the Federal Government and the private sector? One of the dramatically different aspects of ERDA as compared to agencies with which I have been familiar in the past, as for example, NASA, is that our role is certainly to be involved in research, development, and demonstration, usually on a cost shared basis when we get to demonstration.

The end result is not the development. The end result has to be a phasing over into the private sector which might have responsibility for raising the capital and must have responsibility for carrying out the delivery system.

We look at ourselves as one of stimulating work by other agencies, by the State and local governments, by industry and by the private sector. We look at ourselves as what we would hope would be a catalytic agent to help others get on with the job.

We want to do the minimum of work necessary to put this country in a position where we really are utilizing this very, very major resource, our waste material, and where we really are looking ahead to

saving our energies and hence to requiring a lessened supply either domestically or with foreign imports.

Mr. ROONEY. Thank you, Mr. Seamans. Now we will hear from Mr. Falkie, the Director of the Bureau of Mines.

STATEMENT OF THOMAS FALKIE, DIRECTOR, BUREAU OF MINES, U.S. DEPARTMENT OF THE INTERIOR

Mr. FALKIE. Thank you Mr. Chairman, Mr. Skubitz. I am representing Secretary Kleppie in the Interior Department to share with you some of the things we have been doing in the solid waste area.

The Interior Department, among its functions, has responsibility through the Mining and Mineral Policy Act and several other pieces of legislation, to do whatever it can to see to it that the Nation maintains a strong minerals posture.

The mineral use of our country has been rising; each U.S. citizen uses something like 40,000 pounds of new mineral material, that is, new mineral material annually and the import dependence for many of our minerals has been increasing.

We have been working on this business of recovery of minerals from wastes of all kinds since the Bureau of Mines was established which has the prime responsibility in this area, in 1910.

If you look at the problem of where are the raw materials going to come from, there are probably four or five ways in which the country can address its raw materials problems.

One is we can import more. Two is we can find more and mine more from our own domestic resource situation. This will be at lower grades which in itself will be generating more wastes.

Another way is to increase recovery from existing mineral and material processes and mineral and material processes have various types of efficiency.

Another way is obviously to use less, find ways to use less of especially the scarcer materials. Another way is to find ways to substitute some of the more plentiful materials for some of those which are not so plentiful.

Finally, what we are talking about tonight is to recycle materials and reuse materials. It occurred to us 10 or 12 years go that the mineral processing and extractive metallurgical techniques which are so common in the mineral industries could be used to separate waste into various types of materials.

We began this work at our College Park Research Center right outside town here. The fact is that according to EPA in 1972, there were something like 135 million tons of garbage, of urban refuse, but what may not be so obvious to people is that there are significant amounts of other types of wastes, junk automobiles, industrial wastes of all kinds, mineral wastes, liquid wastes, solid wastes, from all types of processing.

In our programs, in the Interior Department, they cover the whole gammut of these types of wastes. What we did is use for the most part, off the shelf equipment and mineral processing equipment were developed to pilot plants, one for incinerated refuse and one for raw refuse.

These flowsheets are patented and several industrial firms are using parts or all of these flowsheets in their actual practice and planning and installing or getting ready to install resource recovery systems in the country.

It seems to us that the municipalities in this country need to look at their refuse disposal systems from a systems standpoint; based on some of the work we have done, we have preliminary indications that the economics could be very favorable in some cases but we are not about to tell people that every city of a certain size is going to have a complete mineral resource recovery system tomorrow.

That is just not going to happen. There is quite a bit of action, as most of you know, across the country on grading, resource recovery systems of various kinds in various places, Rochester, Monroe County, N.Y., the County of Baltimore, Montgomery County.

We do in fact look on these land fills and automobile junkyards and we are working closely with the automobile companies to find ways to recycle automobile wastes of all kinds.

In mine and mill tailings and industrial wastes, to us, are in fact, an ore body in effect for metallics, nonmetallics and combustible materials.

It is our position at this time to continue this basic course and to provide technical assistance through transfer of whatever technology is available to the municipalities and private industry for doing this type of work.

It seems the success of these systems will depend on many things. They are going to depend on what kind of wastes products come from these recycled systems. It is going to depend on the overall system cost. It is going to depend on whether there is a market and whether the market is near the place the waste is generated.

It is going to depend on the suitability of the products for the market. This is a very complex situation because there are cities which could very well finance resource recovery systems but they are not in a position to do so because they are not near markets.

In closing, so far as what the Federal Government's position should be, it seems to me in general speaking, philosophically, this is an ideal situation for the States and municipalities in conjunction with private industry to take the lead.

I do feel that Government has a role and we will continue to play that role in the Interior Department, in the Bureau of Mines from the standpoint of recovering mineral materials from wastes.

However, I believe the primary responsibility for putting this technology and business into practice lies with the States and municipalities and with the private industry. Industry certainly seems to be ready to do so.

The industry and the systems will develop at some risk in some cases to the companies, to municipalities, but we think it is only a matter of time until we see complete resource recovery systems in this country.

Thank you, Mr. Chairman.

Mr. ROONEY. Thank you, Mr. Falkie. We will now hear from Dr. Chang.

STATEMENT OF DR. DAVID CHANG, DEPUTY ASSISTANT SECRETARY, SCIENCE AND TECHNOLOGY, DEPARTMENT OF COMMERCE

Dr. CHANG. Thank you, Mr. Chairman, Mr. Skubitz. I am here representing Dr. Johnson who was supposed to be here representing Secretary Richardson. It is a distinct pleasure for me to join this distinguished group to discuss resource conservation recovery.

I think it is particularly useful to have this type of discussion at a time when both Congress and the administration are actively considering legislation which will provide the much needed stimulus to efforts to conserve our natural resources and improve the quality of our environment and conserve energy.

In this statement, I would like to offer some ideas on some possible useful directions to explore in research and development and information. I think it is generally recognized that the technology is not the major barrier to increased recycling of materials.

The major barriers are economic and social, such as the absence of the stable market for recyclable materials, fluctuating prices, public opposition to recycling and recycling plants, differential transportation and freight rates, a limitation on municipality contract durations and long-term financing needs.

Nevertheless, there are some definite problems in the technology area for the recovery and conservation of materials. There is a need to further efforts among Government agencies to identify and coordinate the present and potential activities in this area, both in the private sector and in Government, so that these activities can contribute effectively to a materials conservation and resources recovery program.

There is a need to develop priorities for our needs to remove technological barriers so that there can be wiser utilization of materials and fuller recovery and use of recyclable materials.

Further, we need to reduce materials wasted wherever we find it, for example, corrosion is costing the Nation approximately $15 billion a year, including various materials and energy.

Wear is costing the nation approximately the same amount too. We need to assure the great reliability of materials through failure analysis and other programs like testing, life testing and advance design, placed on properties and materials.

We must promote improvement in these programs which foster the service of materials as follows, which minimize values, which are costly in materials and money.

A Federal procurement policy should be based on the desired performance requirements; we need market leadership, private business, must conscientiously review their purchasing policies and specifications to eliminate a great culture bias against secondary materials.

I believe we in the Commerce Department can help accomplish this both by encouraging appropriate management to initiate reviews of the procurement practices and providing consultative services in the standards area.

The National Bureau of Standards works closely with voluntary standards organizations in the United States and abroad to facilitate

the development and promulgation of materials and policy standards and specifications which form the basis for equity and trading in the marketplace, including work in the recovery systems.

By working more closely with other federal agencies, we can help them improve the coordination of the materials research programs. For example, this was done through a symposium on resource recovery and utilization which was held at NBS in 1974 which was cosponsored by NBS, the Bureau of Mines, EPA, National Center for Resource Recovery, and the American Society for Testing and Materials.

This was a 2½ day symposium, at which five concurrent workshops were held on resource recovery and in paper, ferrous metals, nonferrous metals, wax, and plastics. Several recommendations on needed research and possible actions were generated at these workshops.

The procedures of this symposium have been published and I have the proceedings here. We urged to support basic research, incorporate materials conservatoin criteria and product design and manufacture.

We can also improve the exchange of information that is experienced in materials conservation and recovery through technical symposia of the types that I have just mentioned, personnel changes involving industry, academia and the Government, and publications.

The National Technical Information Service in the Department of Commerce publishes weekly information of transcripts of technical reports in material sciences. I have here this week's copy of the abstracts of materials sciences.

In addition, the National Technical Information Service provides bibliographies that are prepared by information specialists at NTIS from its own line bibliographic retrieval system comprising almost 500,000 documents and data records.

These computer searches are of two kinds, published searches and online searches, published searches prepared by NTIS in anticipation of user's needs, whereas online searches are prepared by the same analysts on a customized basis to set aside very specific user information needs.

I have here a listing of the currently available published searches. These five searches which were done in May of 1975 on solid waste recovery are in various different fields.

To summarize, I believe there are opportunities for joint participation by Government, industry and academia on program of basic and applied research and the information dissemination, likewise on subjects related to materials conservation and resource recovery.

I believe that these programs can contribute importantly to the success of the national effort. Thank you

Mr. Rooney. Thank you, Dr. Chang. I think our staffs have done a tremendous amount of work during the past several months on this very important subject of solid wastes and how it affects not only local municipalities in the country, but what should be the Federal role.

To Mr. Train, I would like to direct this question. Do you think and do you believe the problem can be solved, if so, how, when and what will the cost to the Federal Government be?

Mr. TRAIN. Yes, it can be resolved. It is going to take probably as long as we are on the face of the earth to deal with it. We will never eliminate the problems of solid waste management, residual management, whatever you wish to call it.

How much it will cost, I really do not know, offhand. I think it is plain and I think maybe the case has been made somewhat here by the presentations of the four of us that perhaps we need some better, more intensive coordination within our own government in this area.

Let me add, since you have given me the opportunity, Fred, that others mentioned demonstration projects. We have about $35 million worth from the standpoint of EPA funding and these are all shared funding projects, underway in various parts of the country.

As you know, there are some that are very significant, particularly energy recovery demonstration projects. There are various projects in various stages of completion, either operation or development.

Each is designed to illustrate that alternative technology. Many of these or a number of them have been undertaken now by private industry in various sectors, in various part of the country.

Likewise many municipalities around the country are following up on some of the resource recovery projects. That is, the St. Louis project, demonstrated by EPA, planning and funding. I have not really answered your question because I do not think it has an answer.

Mr. ROONEY. How much money has the Federal Government contributed to research and development?

Mr. TRAIN. The EPA shares a little under the $3 million figure.

Mr. ROONEY. Is that not an infinite amount to contribute to such a large municipality like the area surrounding St. Louis or do you not think—you talked about it in your opening statement about the relationship between Federal, State, and local. Everyone said that today, all of the panelists talked as though they are speaking on behalf of the OMB.

I do not know whether or not we discussed this matter with OMB but I think if we are going to solve this massive problem in this country the Federal Government has to come in without R. & D. funds but with a matching fund to every municipality in this country if we are going to solve the problem.

We talked about it in this blue book which was written in conjunction with——

Mr. TRAIN. I would disagree with that; at the risk of not getting the same applause, Fred——

Mr. ROONEY. That is what we are here for, very candid discussion of an important problem facing this country. When we talk about it, the facts that I have read—I flew in from Chicago this afternoon to attend this afternoon's and this evening's session.

I read this blue book and I was in awe at some of the statistics they had. Obviously the statistics are not from my committee but are from your department and the other departments in environmental resources and the Department of Mines.

Obviously these are factual statistics that we talk about. It goes anywhere from 2.8 billion tons to 3-, 4-billion tons. I think we have

a very massive problem in this country that we have to face. We have to face it at the Federal level.

We have to share, I agree, with the local and State and private enterprises. I think the Federal Government has to give more than a couple of million dollars rather than dollars in dribs and drabs here and there.

Mr. TRAIN. I agree with that. I do think that we need more resources at the Federal level to assist in the whole solid waste management area. There is no question in my mind about that.

However, I would really, seriously and sincerely question that the need in terms of resource recovery projects needs Federal funds to get them underway and to carry them out to the end because if that is what is needed, then there is something wrong with what we have been demonstrating.

The demonstration of these projects has been successful in underlining the economic viability of these projects. The fact that the separation of the wastes, the conversion of the organics to energy and the recovery of the ferrous and nonferrous metals, whether it is grass or whatever in particular case, makes economic sense.

The project we demonstrated with EPA is a contribution of something I think not over $3 million in St. Louis has been—the process is being replicated by the city of Chicago and on a considerably larger scale with no Federal funds whatsoever. This is happening in various parts of the country.

The same technology is being used by utilities in cooperation with the local municipalities, all private funds and local funds, but really utilizing the economics of the marketplace to make it work.

We demonstrated again for about $2,500,000 another resource or energy recovery project in Franklin, Ohio. That technology has been taken by Hempstead, Long Island and they have about a $35 million investment by private enterprise because it makes sense economically.

I think if you start throwing Federal money into that you are going to twist the economics and incentives and will perhaps get wrong solutions. That is not to say we do not need more Federal R. & D., more Federal assistance for—technical assistance to help break through some of the institutional obstacles that I am very sensitive to and very worried about it.

Mr. ROONEY. Mr. Skubitz.

Mr. SKUBITZ. I am very grateful Russ, to hear your viewpoint on this thing. I think it is a very sensible approach to take.

Mr. TRAIN. It has not been cleared with OMB, at least not recently.

Mr. SKUBITZ. The point is we all have a feeling that all Uncle Sam has to do is pump in more money and that is going to be the solution. We all want more housing. I just got back from a visit out of the State where we talked about more housing.

We could pump billions into the housing program or else pump billions into the health program, or this. It all gets down to one thing. We do not have the money on the Federal level to take care of all of the cities and State problems.

We are looking for, I think, a system whereby the Federal Government and the other two work together trying to find the solution to

this. I would like to ask another question getting a little bit away from this.

All of us are interested in protecting the environment. The thing that bothers me on Capitol Hill is it seems like every piece of legislation that we enact here is requiring an environmental impact study to solve—even in my own State, for example.

We could carry that a little further. It seems to me that we are loading the agencies down with requests that everything has to have a study, but we are not giving the help that is necessary to carry on these studies.

As a result of that, actually, we ourselves are slowing up the whole process. Am I right here or am I wrong or do you have the staff to carry on all of the studies that are being requested?

Before you answer that, let me tell you I just got back and I do not know of any program that we have that does more in the rural areas to protect the environment than the Washup program.

Yet all of these programs are being held up because of environmental impact statements.

Mr. TRAIN. This perhaps is a little bit off the theme. There is no question that we have got underway in the environmental impact statement process—it has had a tendency because it was something new to all agencies, to have a certain amount of delay involved.

The process should begin at the beginning of the planning process. I think many of us have had resource problems, EPA among others. We do, in our environmental impact analysis on many programs, such as sewage, construction, sewage treatment plants.

This does put a lot of pressure on us in terms of resources. I think it is worthwhile. We have just completed one analysis for example of a very large sewage construction treatment project. I will not indicate where it is but I believe our analysis shows that an alternative site and alternative system that was brought out by the environmental impact process may save the taxpayers of this country upwards of around $200 million.

There are problems involved but there are some real benefits to be achieved as well.

Mr. SKUBITZ. Do you feel that EPA can best perform as a regulator or as an innovator of new programs?

Mr. TRAIN. Both. You are raising a serious question. I know it is suggested from time to time that EPA mixes both research and regulation to stand setting while other models in the Federal Government, such as OSHA and NIOSH try to separate these and indeed Bob's agency, ERDA, represents a concern over the mixing of development and regulation in one agency.

AEC split up in a sense, up between NRC and ERDA is a case in point. I, for one, and I have much concern with this Bob, feel that there are pros and cons in both approaches. I believe a research base within your own agency has many advantages in terms of realistic, rational standards setting and regulation.

This is a very real plus. There are obviously certain risks that you run in an establishment of that sort. There is always the concern that your research may be warped by your regulatory thrust.

It is my job to try to see that does not happen. That is the other side of the coin. I believe that the EPA model may not be the best but I think it is a very useful and valuable one for us to pursue at the present time.

We have another model in the NIOSH–OSHA area, and I would suggest, let us pursue that one and see how they do also, without making final judgments and trying to impose the same pattern across the Government.

I believe in diversity, experimentation and I believe that EPA as presently designed has a real opportunity, particularly in the solid waste area to be innovate and provide a lot of assistance to the State and local governments, not only the regulatory sense, because we do not have regulatory authority in this area, at the present time, but in the cooperative, technical assistance sense.

I think perhaps that is one of the most positive and biggest payoffs to come.

Mr. ROONEY. Mr. Seamans, what type of research is your agency presently undertaking to convert discarded materials, solid waste, to energy? You mentioned that. I think you said you could save about 20 million barrels per day. Is that the figure?

Mr. SEAMANS. What I said was that the conservation can save on the order of 20 million barrels per day by the year 2000 but this was not entirely in this area. This was improving automotive efficiency, improving the efficiency in the manner in which we heat and cool our buildings, improving industrial efficiency, as well as in the waste area itself.

Mr. ROONEY. Is your agency doing anything to undertake the programs to convert discarded materials?

Mr. SEAMANS. We have a very modest program as I indicated, amounting to a total of around $6 million per year.

This is split up into on the order of 25 or 30 small projects. I mentioned one; namely, the conversion of urban solid wastes and sewage to methane. This is a project we have underway in Pompano Beach, Fla.

I would be happy to submit for the record, if you would like, a listing of those various projects.

Mr. ROONEY. I have some very technical questions I would like to ask you and we would be here until midnight and I know the panel, we have agreed on 1 hour and 15 minutes. I will submit them to you and I would apprepirate very much if all of the panelists would answer the questions the Chair will submit for their review.

Mr. Skubitz?

Mr. SKUBITZ. Mr. Seamans, is it technically economic to use garbage and trash to make energy?

Mr. SEAMANS. Yes; I think Mr. Train was getting at that issue when he said that in his view we are developing technology, we are working toward techniques that will make it economically attractive to utilize our wastes.

I believe this can be done using our trash to generate process heat. They have the Saugus plant providing heat for General Electric which is right nearby. We have the St. Louis experiment.

We are working on oil with wastes to essentially generate electricity as another indicator. These are just a beginning and we still have a lot to learn. We can still improve the effectiveness and get down the costs.

The question was asked a little earlier as to what the Government's role should be. I would agree that our research and development should be cooperative. We should work toward recovery means that are economical so that Government does not have to continually finance them.

However, we are talking about very large sums of money. Just to give a number, to recover some 200 million tons of waste per year, this would be maybe 50 percent from urban solid waste and sludge and maybe 35 percent agriculture and no less industrial.

We are talking about plants that will aggregate out at something like $5 million. To get this done, I think that some level of loan guarantee may well be desired. That is the reason I sort of stressed the synthetic program that we are recommending to Congress to provide loan guarantees.

That is the reason we have been presenting to Congress this other concept of NG and independence agency which would be able to make loan guarantees and price guarantees up to $100 billion some of which could be used for this purpose.

Mr. SKUBITZ. How much did you say?

Mr. SEAMANS. $100 billion.

Mr. SKUBITZ. $100 billion?

Mr. SEAMANS. Sure because it would pay for all forms of energy, coal, synthetic plants, converting coal to—and shale, over to gas and oil.

The kind of plants about which we are talking here in some areas, they use the coal and we have to do something about the railroads, to provide loan guarantees for that purpose.

We are faced with a very major crisis. Maybe it is not too bad now but it is going to get progressively worse. We have to think in terms of bold steps or we are going to be in serious trouble 15 or 20 years from now.

Mr. TRAIN. Perhaps if I could jump in, with a pot of money that size, perhaps EPA ought to get in on that. I was just wondering whether the loan guarantee program designed primarily for the synthetic fuels effort might not hopefully and appropriately be extended into resource and energy recovery systems such as we have been talking about today.

I think there are aspects of this that probably bear exploration.

Mr. SEAMANS. I think very definitely and that is what I meant to say. We are going to have to raise capital to the level of $5 billion to be able to take care of 200 million tons per year.

I would think that part of the $100 billion could be used. This is not to be used as direct expenditure. This is to provide loans so that capital can be raised privately. The cost to the taxpayer will be much, much less than that figure.

Mr. ROONEY. I have one final question and I will direct it to anyone. I have no questions of Mr. Train, Mr. Skubitz, I do not know if you do. I just have one final question.

The Federal Government, all of the panelists have agreed, should share in R. & D., is that correct?

[Chang, Falkie, Seamans, and Train nodding heads.]

Mr. Rooney. Should we not share directly with any municipality. We have in this country today a very, very serious problem of respect to solid wastes. Solid wastes does not stop at the borderline of Allentown, Bethlehem, or Lehigh County or the State of Pennsylvania.

It goes over into State lines, into every one of the 48 States and the mainland. Every river in this country today is polluted. It will continue to get worse and worse and worse. In the State of New Jersey, they are complaining that Philadelphia's dumping sludge into the New Jersey shores.

It has to be a very, very serious Federal problem. Why can we not attack it from an act at the Federal level?

Mr. Falkie. Mr. Chairman, just one comment in partial response. I think we should not underestimate what the Federal Government is doing now. I realize that there is a distinguishing feature between what I am talking about and what you are talking about but the amount of effort that is being expended by EPA, by ERDA, by the Bureau of Mines and other agencies is fairly significant in terms of at least providing technical assistance to the municipalities.

We have municipalities coming to us all the time to point them in the right direction. We do not want to act as consultants, we think that private industry should do that. They are coming and they are getting help, but they are not getting financial assistance from us except in what little amount, and we are certainly tiny compared with the two giants on my left.

However, when they come they need to get assistance and we are able to point them in the right direction.

Mr. Skubitz What about when you are talking in terms of $100 billion though?

Mr. Rooney. I think if we are going to solve the problem, there is going to have to be a massive approach because if we do not do it soon, we are going to choke ourselves to death in this country.

It is something that I think we ought to take into consideration, maybe not in this session of Congress, but in the very near future because time is running out as far as environment of this country is concerned.

Mr. Train. If I may just offer one thought here, I am not sure that I have not really looked closely at your program, where you have gotten into this, and what you just said led me to the thought that surely along with the management of the waste problem itself, part of the solution deals with the front end of the system, the source itself and changes in product, changes in processes, and changes in consumer habits and preferences where this can be achieved.

All of these I think are likewise part of any systematic approach to the overall solution of the problem.

Mr. Rooney. Let me ask you one other question. Do you not think transportation, and Congressman Skubitz and I have discussed this on some numerous occasions, we believe to really focus on transportation in Congress, they should not be fragmentized in 11 or 12 different committees, 7 or 8 subcommittees, 3 or 4 full committees.

Do you not think that all of this problem should be concentrated in one department in government and one committee in Congress?

Mr. SEAMANS. May I answer that, Mr. Chairman, by saying in the last calendar year we appeared before 35 committees and subcommittees of Congress and I would be delighted to see them consolidated so that we appear before a smaller number.

Mr. ROONEY. Thank you.

Mr. SKUBITZ. I have a couple of short ones. The first thing I would like to ask is if trash and garbage can be used in the production of electricity and can be used as a cheap cure?

Why do not more of the electrical companies turn to this use and No. 2, in the use of this stuff, does it create a clean air problem?

Mr. TRAIN. Those are both darn good questions. I will take the last first. There are problems in terms of particulates. It does have the advantage usually of being low in sulfur so there is some gain on one side but you lose on the other.

We have found in the St. Louis project, for example, additional control work was necessary but the problem is solved and has proven itself.

As to why the utilities have not jumped at this, I think first, historically other fuels have been so cheap and easy to handle but really so cheap that there has been very little incentive for utilities or anybody really to look at any of the more difficult, more exotic sources of energy.

That picture is changing very rapidly as we all know. Second, you are introducing a new dimension of problems to the average utility plant engineer. He has to become a chemist. He is not used to being a chemist, he is used to producing electricity.

He has a whole different kind of range of problems with which to deal. There is inertia involved in this and this, I think, is quite understandable. This takes a certain amount of encouraging, pushing and demonstrating to get these things off the dime, so to speak.

The same kinds of inertia that exist in the average city, the average municipality, sanitation services in the average municipality are not the most innovative of institutions as a rule.

All of these problems, together with the problems of geographic scope which we have touched on, the boundaries that Fred mentioned. We have tremendous problems between Pennsylvania and New Jersey now fighting it out in the courts as to who is going to take whose garbage and that sort of thing.

These are part of the difficulties. I think that there is a place here for a strong technical assistance capability that really does involve an awful lot of money. It is a matter of making available a body of expertise and experience that is not easily available to the average community and actually in an overall systematic fashion.

One does not really find much in the private sector because we look for—there is expertise in the private sector in terms of marketing and demonstrating particular kinds of resource recovery technologies but there you have a self serving kind of consultant relationship.

I do believe there is a role for government. I would also underline what Mr. Falkie said, the importance of keeping the private sector——

Mr. SKUBITZ. Perhaps a tax incentive might be encouraging to the utilities to try out the system.

Mr. TRAIN. We have, from time to time, suggested various kinds of tax incentives. They do not tend to be looked upon with great favor by the Treasury. As you know, there is a traditional antipathy towards tax credits and other forms of tax writeoffs of that sort.

I am an old treasury man from way back so I used to share that bias, but now I am on the other side of the street like everybody else. I think it is a great idea to have tax incentives.

Mr. SKUBITZ. I would like to ask Mr. Falkie a question. Do you think it is really worthwhile to separate the metals and glass from trash?

Mr. FALKIE. I most certainly do. This, of course, is going to depend—the value of these products is going to depend on location and type of purity that you get. Some of the specifications for glass are pretty tight.

Just taking a look at the whole estimated scrap value of all the garbage used in the 1973 EPA numbers of 135 million tons of the like 1.6 billion dollars is the scrap value and this is divided into ferrous metals, non-ferrous like aluminum and zinc, copper and glass and combustibles.

I think we are being conservative. If you look at the overall economics of the system, it looks very attractive, that the system economics are such that recovering this can help pay for the refuse disposal. That is not going to mean that somebody is going to have money made. They are not, but the answer to your question is very definitely yes, and some of the systems which are under design in the early stages of construction right now are based on economics for recovering especially the ferrous metals, but also the nonferrous and some other materials.

Mr. SKUBITZ. If it is going to cost you two billion and a half to collect a billion dollars worth of waste and garbage, is it a good business in which to get?

Mr. FALKIE. That is where you have to look at the whole economics of what you can save in the refuse disposal system. I was just talking about the scrap value itself, so we have to look at the whole system in cost in order to be able to calculate a cost benefit ratio.

Mr. ROONEY. Thank you very much and I want to thank the audience. We have had a tremendous turnout here this evening. I know there are many of you who would like to be downtown watching the theatre or something else. I commend all of you for being here tonight.

This meeting will adjourn and reconvene at 9:15 a.m. tomorrow. We will discuss the state and local role in resource conservation and recovery. Thank you.

[Whereupon, the meeting adjourned at 9:20 p.m. to reconvene on April 7, 1976, at 9:15 a.m.]

SYMPOSIUM ON RESOURCE CONSERVATION AND RECOVERY

WEDNESDAY, APRIL 7, 1976

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THE STATE AND LOCAL ROLE IN RESOURCE CONSERVATION AND RECOVERY

SESSION 3—9:15 A.M.

Mr. HEFNER. The meeting will come to order. We are happy to have each of you here this morning—you guests and interested spectators.

It is a pleasure for me to moderate the third session in our Symposium on Resource Conservation and Recovery. I appreciate the opportunity to participate with you in today's meeting.

This is a somewhat unusual format for a congressional committee to work in. But the problem we are addressing here is also unusual in scope and complexity.

We are not faced with an issue in which the Federal Government has a clear-cut role, but one in which all levels of government have a direct interest. The problem is not one for which the Congress can develop a national policy on its own.

It is not clear to me, at least, what sort of mandate we have on the Federal level for dealing with this problem.

This subcommittee has held hearings already on the problems of solid waste and we even began for a while to attempt to draft legislation but we have not moved very far yet. The symposium format we have adopted for this series of meetings gives us all a little more freedom to discuss among ourselves the problems we face and how we can work together than does the more formal committee hearing procedures.

It also lets us on the subcommittee have a fresh start at the problem again. It takes some of the burden away from me, representing the subcommittee, to be the center of attention.

I am going to pass the ball to you gentlemen on the panel and let you run with it. I hope to be more of a referee and less of a ballplayer here. I understand we have some adverse opinions and positions represented here today, so if things get to be too adversary, I will blow my whistle.

This particular session is entitled, "The State and Local Role in Resource Conservation and Recovery". I hope we will have a wide-

ranging discussion in our limited time of the aspects of the solid waste problem facing State and local governments and what the involvement of the Federal Government should be.

I think we all recognize the primacy of the State and local governments in dealing with solid waste problems. Although their involvement in resource recovery and conservation may be of recent origin, their familiarity with the problem of solid waste disposal is ancient.

Cooperation between the State and the Federal Government basically dates to 1965 with the Solid Waste Disposal Act which focused on the problems of disposal, as the title indicates. In 1970, amendments to this act focused on resource recovery.

The Federal role was increased but was still limited and involved primarily in the funding of new technologies for disposal and for energy recovery as well. Along with the increased interest and involvement of the Federal Government, almost every State, county, or local government began to plan for solid waste disposal.

Here the questions arise. What has been traditionally a local or State problem begins to have national effects. There are as many plans to dispose of discarded materials as there are political subdivisions.

The question is whether some degree of uniformity is necessary to protect the flow of American commerce. Interstate problems have arisen which may have no solution but on the national level.

Another concern is how the problems of solid waste affect our efforts to develop a comprehensive national energy policy. Both the generation of the discarded products and their disposal involve energy use and energy can be recovered from solid waste as well.

The Federal Government has taken the lead in planning and developing a national energy policy. The question is to what extent the Federal Government should also become involved with state and local governments in dealing with their solid waste problems.

Of concern also, is how solutions to solid waste problems are fitting in with our approach to other problems of environmental pollution. We have, or are developing, more or less clear approaches to air and water pollution on the national level.

The question is whether similar approaches will work for solid waste problems. And, important is the political concern of what kind of relationship will exist between the Federal Government and the State and local government.

We can coordinate the work, which must be done on the local level, or we can direct that work. We can limit ourselves to providing technical assistance only or we can provide financial assistance also.

I do not have the answers to these questions. I hope you gentlemen on the panel do.

Today's panelists are, Mr. Walter Kiechel, Assistant U.S. Attorney General for Land and Natural Resources, Mr. Sheldon Albert, the solicitor of the city of Philadelphia, and Mr. David Bardin, the director of the Environmental Protection Agency for the State of New Jersey.

These panelists will be asked to address the effect and legality of State laws that prohibit the transportation of garbage through or the disposal of garbage from one State into another State.

Mr. Sheldon Meyers, Deputy Administrator for Solid Waste with the United States, EPA, Mr. Arloe Paul, chairman of the Wisconsin State Recycling task force, and Mr. Bentley MacKay, director of the Louisiana Governor's Conference on Environmental Quality and Mr. Frank Raflo, supervisor of Louden County Va. will address the role of the States and local governments in relation to the Federal Government in solving the discarded materials problems.

The format we have adopted for this particular symposium is that each panelist will open with a 5-minute statement, then there will be 50 minutes of discussion between the panelists and each panelist will be given a 5-minute closing statement.

In the interest of conserving time and getting to as much discussion as we possibly can, we will encourage you gentlemen, if we could, to limit your opening remarks to 5 minutes.

Then we would like for you to engage in debate or whatever you would like to call it and get as many questions asked and answered as we possibly can.

Someone outside the door gave me a solution probably to the solid waste problem saying if we could get it all together, we could give it to the Post Office and it would never get any where but I do not think that would be the answer to it.

I think first we will start with Mr. Walter Kiechel, U.S. Department of Justice, Division of Land and Natural Resources. Mr. Kiechel?

STATEMENT OF WALTER KIECHEL, DIVISION OF LAND AND NATURAL RESOURCES, U.S. DEPARTMENT OF JUSTICE

Mr. KIECHEL. Thank you, Mr. Chairman. The business of the Department of Justice and particularly the Land and Natural Resources Division, of which I am Deputy Assistant Attorney General, is litigation.

The Solid Waste Act of 1965 as amended by the Recovery Act of 1970 has not given rise to much litigation. This is for two reasons. It is not a regulatory Act so there has been only limited litigation. The second reason is that there is no provision in that act, unlike the other major environmental acts of the United States, the Clean Air Act and the Federal Water Pollution Control Act for citizen suit or for review of the actions of the EPA Administrator by the courts of appeal.

There has been one suit brought under the provisions of the act. That is the case by the Natural Resources Defense Council against Russell Train, pending in the district court in San Francisco.

This act came about because of the failure of EPA to discharge one of the affirmative duties imposed upon it by the 1970 Act. That is to develop guidelines for solid waste recovery, collection, separation, and disposal systems.

That is a requirement of section 209 of the Act. Such guidelines per se would seem to be a matter of little consequence. However, another provision of the act, section 211, makes those guidelines applicable to Federal facilities and thus the combination of these two

provisions of the act has the potential of having some impact on the total solid waste stream of the United States because of the amount of solid waste generated by the Federal Government as a proprietor.

This suit initiated in June of 1974 and has resulted in the promulgation at least in proposed forms of seven guidelines by the EPA. The guidelines are to cover land disposal, thermal processing, collection, source separation, beverage containers, procurement and the resource recovery facilities.

The other litigation to which the United States has been a party is what I would call local litigation. By so characterizing, I do not mean to minimize it or denigrate its importance.

In fact, I think it is entirely appropriate and consistent with the philosophy of the Solid Waste Disposal Act. That act, as you recall, says in its congressional declaration of purpose, that the collection and disposal of solid waste should continue to be primarily the function of State, regional and local agencies.

The principal case in which we have been involved is the so-called sludge war here in the Washington, D.C. area. This case not only illustrates the inherently local nature of the problems in this area of our environment but also is demonstrative of one of the vexing technical problems in solid waste.

That is the availability of landfill areas. The case of those that deal with the problems of undigested sludge generated by the treatment of sewage at the Blue Plains plant is of concern.

Parties in that case, in addition to the United States, are the State Water Control Board of Virginia, Fairfax County, the State of Maryland, Montgomery and Prince Georges Counties, the District of Columbia and the Washington Suburban Sanitary District.

This case was resolved by the entry of a consent decree in 1974, and unfortunately has been reactivated in recent days on the motion of the United States, parties in Virginia and the District of Columbia to require the counties of Montgomery and Prince Georges to select sites necessary for the disposal of sludge as required by that consent decree.

I will not go into the details of this controversy. It is nothing new. The problem, that is. I remember some years ago when I was counsel for the United States in the case of *Wisconsin* v. *Illinois* involving the question of whether the treated effluent of the Chicago area would be returned to Lake Michigan.

Toward the Stickney Works of the Metropolitan Sanitary District of Greater Chicago, it was at that time the largest sewage disposal works in the world and I suppose still is. In fact, it was listed in one of the seven engineering wonders of the world.

I remember very vividly those mountains of undigested sludge there and this was at a time when there was some market for that, at least they were trying to do something with it, but now this problem, as well as the mountains of sludge, has grown.

I suppose this illustrates another one of the vexing problems confronting us today in the environmental field. That is the interrelation of the environmental problems, the more sewage plants that are built with Federal and State financial assistance, the more sewage we have to dispose of, and the more difficulty we have with respect to the disposal of that, and finding landfill areas.

Of course, the most timely and celebrated case in this area is one that will be discussed by my colleagues here on the panel and that is the case brought by the city of Philadelphia and others against the State of New Jersey with respect to the New Jersey Waste Control Act banning the importation of out-of-State solid wastes.

Since the contending parties are represented on this panel and since the United States is not a part of that litigation, I will do nothing more than note that the Supreme Court did take jurisdiction of that case on Monday of this week.

Thank you.

Mr. HEFNER. Thank you, sir. Our next panelist is Mr. Sheldon Albert, solicitor of the city of Philadelphia. Mr. Albert?

STATEMENT OF SHELDON ALBERT, CITY SOLICITOR, PHILADELPHIA, PA.

Mr. ALBERT. Mr. Chairman, the city of Philadelphia welcomes the opportunity to participate in this symposium and comment on State nonimportation statutes, for we are presently in that caldron.

In fact, the Supreme Court of the United States just 2 days ago noted jurisdiction in our appeal from New Jersey's preclusion of our solid waste. A stay on preclusion of solid waste importation granted early this year by Justice Brennan, thus becomes effective until the matter is heard and decided by the Supreme Court.

In our opinon, jurisdiction was imperative. Without a Federal sphere, our problem—the Nation's problem—is insurmountable. Using Philadelphia as a microcosm, here is a nutshell view of the situation.

Our city collects 7,000 tons of solid waste each day. Approximately 1,500 tons are disposed of in incinerators which barely meet present antipollution standards, and that at an upgrading capital cost of $10 million.

The remaining tonnage is transported to New Jersey, which represents the only logistically feasible area. In fact, the only presently logistically available Pennsylvania site can handle, at best 375 tons a day—and other sites, short of an effective rail haul system, would require an expense of at least $30 million for trucks and transfer stations and would be exhausted in a year.

Thus, assuming an effective import ban, the city of Philadelphia is left no alternative but to fire up its dormant incinerators—violating every standard of pollution control—open up its 1,100 private incinerators, representing open burning at its worst, and still allow 4,000 tons of solid waste to accumulate in the streets.

And the problem is not really just ours. In the past 10 years, we have reduced pollutant emissions from 6,000 tons yearly to 400 tons. We have reduced our municipal incinerators from 4 to 2 and our private incinerators from 1,100 to 400.

We have spent public moneys in the amount of $16,550,000 in planning, capital expenditures and demonstration activities in solving a regional problem. And New Jersey's import-ban statute has recreated that regional problem.

When a sister State forces us to increase our emissions to the danger level, who suffers? Fully 50 percent of the time, our prevailing winds will cover five New Jersey counties with these emissions.

And 10 percent of the time they will drift off to Delaware. And these clouds will increase sulfates in the air already 1½ to 2 times in excess of acceptable criteria, as well as hydrocarbons, oxides of nitrogen and carbon monoxide. Smoke, odor and flyash will permeate this entire region.

This, and every sense of community and commonweal, indicates that we are faced with a problem that is truly Federal and not parochial.

New Jersey's decision in our opinion impacts on environmental and pollution issues that are truly beyond our single litigation. It is obvious that the complex ecosystem which provides man's life sustaining environment knows no political boundaries.

Political restraints—New Jersey's here; the New England States in other situations—are artificial and clearly environmentally unsound.

There is required a Federal mandate, congressionally sanctioned over and above the Solid Waste Disposal Act of 1965 and the Resource Recovery Act of 1970, which notes clearly that the question of solid waste disposal is national in scope and consequence—is one truly of Federal preemption.

Philadelphia's position before the Supreme Court is well known. Solid waste, we believe, is a legitimate subject of trade or commerce. It is an essential element in the production of goods and a component part itself of commercial intercourse.

We believe that New Jersey's law is an unreasonable discrimination against interstate commerce and thwarts an established Federal policy calling for interstate cooperation.

We believe that solid waste in proper sanitary landfills does not constitute a material threat to the health, welfare, and safety of anyone—nor is there evidence extant that it does—and it is not a threat to health or environment.

We are convinced that an immediate, absolute, and complete ban on the entry of such material by any State, parochially made and provincially born, serves no purpose but to increase the danger to us all.

Thank you, sir.

Mr. HEFNER. Thank you, sir. Our next panelist is Mr. David T. Bardin, New Jersey State Environmental Protection Agency. Mr. Bardin?

STATEMENT OF DAVID T. BARDIN, NEW JERSEY STATE ENVIRONMENTAL PROTECTION AGENCY

Mr. BARDIN. Thank you, Mr. Chairman. I appreciate the opportunity to participate in this panel. I congratulate the committee on the series of symposia that you are conducting to raise public attention and public awareness of a bundle of issues, which in my judgment, are one of the most important, not only for environmental protection in this country, but for sound energy and economic decisionmaking and organization in this country.

You no doubt suspected that I would be here to respond to my distinguished friend from Philadephia but may be surprised that while we will set the record straight on a couple of points, my object

here is to take on, not the city of Philadelphia, not to ask why they have not fixed up their incinerators, but to take on the more fundamental question of the lack of a national policy in the executive branch and a clear need by Congress to correct past oversights.

In my judgment, no more profound error has been made in this field than the judgment of former President Nixon that solid waste disposal was an issue for State and local government alone with nothing but the most minor technical assistance from the Federal Government.

I believe it was a mistake when he made that judgment but even for those who chose to defend his decision at that time in the light of our perceptions prior to the oil embargo and the appreciation this country has been assuming of the energy challenges to our future.

Even if one defended the decision when Mr. Nixon made it, there cannot be any excuse for the continued inattention by the present leadership of the executive branch to a fundamental problem, not only for metropolitan areas, for urbanized New Jersey and urbanized Pennsylvania and many other metropolitan regions around the country, but a profound effort in the way in which interstate commerce has been regulated.

The case that is pending before the Supreme Court is an attempt to use the commerce clause of the Federal Constitution to require a State to stop protecting itself and its people and its resources and its needs.

However, it comes on the heels of inadequate action by the Federal Government, inaction which it is high time that this Congress corrected to use the commerce clause, to discourage the proliferation of unnecessary solid wastes, to encourage the recycling of materials, to encourage the recovery of energy value of the wastes that we must produce, to encourage the recovery of resources and to meet the real problems, not only of our metropolitan areas but of our economy as a whole.

We, in New Jersey, have been suffering from a natural gas shortage which I know that your constituents, Mr. Chairman in North Carolina, have felt about as keenly as we have because basically we are dependent upon the same natural gas pipeline.

We are terribly sensitive to these issues. Each day New Jersey generates 35 million pounds of solid wastes. If you take the figures that our friend from Philadelphia gave us, he is reporting that in addition to the 35 million pounds a day that we generate ourselves, his constituents are adding in another 11 million pounds, not to mention what the good people in the New York metropolitan area are shipping to us.

If you took New Jersey's own production, gathered it in one place, in one football field, daily, that would pile that football field 60 feet high. That is six stories high in solid wastes.

Yet if you translate the energy potential of that solid waste, into oil, that is almost worth 1 million gallons of oil a day going to waste. In addition, it has 1,200 tons of ferrous metal, 1,400 tons of glass, 120 tons of aluminum, 15 tons of copper, 8 tons of zinc, and 1½ tons of lead.

We should begin to cut this waste, on the one hand and mine the resource on the other. Garbage offers potential energy savings in many ways. For example, when you produce steel from scrap rather than from virgin ore, you use less than one-fourth of the energy needed to proces the virgin ore.

When you resmelt aluminum, it takes only 10 to 20 percent of the energy used for producing aluminum from bauxite, a similar savings exists in copper and many other metals.

There are similar savings in the case of glass where you produce glass from broken glass, rather than from virgin sand. The possible savings are even more dramatic in the case of agriculture and plant wastes, which could either be burned or converted to animal feed with a great savings in energy.

Indeed if this country, rural areas as well as urbanized areas, were to recover only 50 percent of the energy potential of agricultural and other plant life, we would supply 10 percent of the country's total energy needs.

I urge you, Mr. Chairman and members of this distinguished committee, to recognize your opportunity and responsibility of dealing with solid waste not merely as a problem to dispose of an unwanted offshoot of our civilization but also as an opportunity to correct mistakes of how the so-called free market has operated.

Last night you heard of the so-called free market. You heard how one Federal agency is requiring the use of virgin materials in a certain form of packaging and forbidding the use of recycled materials.

You know from your experience in the regulation of railroads the consistent failure of this National Government to give the transportation of scrap equal treatment, equality of freight rates with the transportation of virgin ore.

The fact is that Federal policies, the Federal administration of the commerce clause over the decades has contributed, is contributing and if not corrected, will continue to contribute, to the proliferation of solid wastes to the detriment of every single American man, woman, and child.

Our Federal institutions are out of date and it is time they were overhauled by a new comprehensive regulatory approach which does not limit itself to the question of garbage but sees garbage as part and parcel of an industrialized national economy, a productive economy of a transportation economy as well as a solid waste economy.

New Jersey is the most densely populated State in the country. They have an average of 1,000 people per square mile. We are faced with a lack of real alternatives to landfills and our landfill capacity which is 2 or 3 years of life left on the average throughout the State.

We too are highly metropolitanized but we do not have any one city as large as Philadelphia or New York City. New Jersey has never opposed Federal legislation and we do not now oppose congressional action which seeks regional solutions to waste disposal problems.

We have never opposed congressional action to require interstate solutions but in the absence of such legislation, and that ladies and gentlemen is the fact, Congress has failed to act in any meaningful way, to create or mandate regional solid waste solutions.

Failing that action, we strenuously oppose the notion that the commerce clause of the Constitution obliges a State to open its land to be used as a dumping ground to be filled with other States solid wastes.

It is particularly ironic to hear that notion pressed in the Supreme Court of the United States and here today by the city of Philadelphia, a subdivision of the Commonwealth of Pennsylvania, whose adjacent Pennsylvania counties with the sanction of Pennsylvania law and administration, excluded out of county wastes by exercise of their police powers.

Philadelphia does not sue the adjacent counties, Philadelphia does not sue to secure access to the ancient mines which are badly in need of rehabilitation and filling, no, Philadelphia sues the State across the Delaware River on its theory of the interstate commerce clause.

The Supreme Court is going to decide that question, I am not. I am not—I am not counsel in that case and will not debate it here. I want you to know what is the real purpose and real intent of the New Jersey statute and regulation under challenge in the Supreme Court which the city of Philadelphia carefully does not describe in detail.

We are trying to control the importation of solid and liquid waste generated outside of the State. We are trying to do so responsibly. We are now subject to even more out of State solid wastes than when the lawsuit was started.

It has gotten up to 2.4 million tons a year. This 2.4 million tons a year of solid wastes deposited to a depth of 20 feet would require a landfill acreage addition of 185 acres a year.

That means in 3½ years it would require a square mile of New Jersey land.

Mr. HEFNER. Mr. Bardin, you have 30 seconds more, sir.

Mr. BARDIN. I want to make two other points. One: Sanitary landfills are at best a necessary evil for dealing with most of the wastes of the country. It is a transition to that New Jersey law and regulation which is aimed at landfilling but not at resource recovery.

Any out-of-State solid waste which is headed for resource recovery or recycling to the tune of as much as 70 percent of its energy or material value is welcome in New Jersey.

What we have is a balanced regulatory device rather than an impermissible intrusion. Thank you very much, Mr. Chairman.

Mr. HEFNER. Thank you, Mr. Bardin. Our next panelist is Mr. Sheldon Meyers, U.S. Environmental Protection Agency. Mr. Meyers?

STATEMENT OF SHELDON MEYERS, U.S. ENVIRONMENTAL PROTECTION AGENCY

Mr. MEYERS. I just want to make a few points. One: To put into context the rationale as to why past administrations have considered the collection and disposal of solid wastes a local problem.

It was in the context of the air and water laws which as you all know, when something goes into the air, you have no control as to where it can go, likewise into the streams.

The collection and disposal of solid wastes on the other hand, is something very visible that one can see, put in a truck and move around. It is in that context which does not necessarily at all mean that there is no Federal role.

There has indeed been a Federal role in the Resource Recovery Act of 1970 and the Solid Waste Disposal Act of 1965, which did mandate admittedly a modest Federal program. That particular program allowed us to beef up in the States the various programs that they now have.

Before these laws were put into effect, as I understand it, there were approximately 10—less than 10 solid waste people in State governments. There are now over 400. This is absent any national regulatory program in the solid waste area.

From the standpoint of EPA, we have been working rather vigorously toward getting the various States to do that which they can do under State law, absent Federal law.

We have done that with rather modest means. We have a modest grant program which this year and last year was about $3 million and distributed amongst the States, admittedly, that is not much, but it did have a rather significant impact.

We provide technical assistance to the various States and those kinds of assistance are in the arena of helping them reduce cost of collection to set up source separation programs and assist in the decisionmaking with regard to resource recovery plans.

We also have a rather extensive program of demonstration grants which allow various communities, both the governments, to get involved in the rather large recovery plants that they might not otherwise be inclined to do.

This program started several years ago and in the next several years, I believe we will see the fruits of this particular effort. I would like to touch upon the treatment of municipal solid wastes as compared to hazardous wastes.

The concern is whether or not and to what degree they ought to be treated separately. In our view, we are talking about a general land disposal program that has as a more stringent subset, the treatment of hazardous wastes.

That is an important consideration. We hope that the new legislation being talked about will permit us to address that particular problem in a regulatory way. While I am talking about new legislation, I think it is important to note that one of the constraints against resource recovery plants is what do you do with the materials that are recovered?

One needs stable markets so that material can be recycled back into reusable products. Absent stable markets, one can envision a situation where a rather large expensive resource recovery plant is built, wastes are separated and at some point in time, you take that separated waste and landfill it. That would be bad news.

Local government role in resource recovery plants is extensive. I have mentioned that the collection and disposal of solid wastes is local. Very many communities just cannot afford to have expensive mechanical capital intensive resource recovery plants.

An option that must be looked at by communities is whether or not and to what degree they should be banded together, viably and economically on a regional scale which cannot be done by themselves.

For many communities, after such analysis, it will be fairly evident that a capital intensive resource recovery plant is not desirable and for those people, there is a concept called source separation for which we also have a demonstration program going on in Marblehead, Mass., where the waste is separated by the household and collected separately.

That material is the same kind of material that ends up in a garbage dump normally, and if a capital intensive plant is built, that garbage is processed and then separated out.

What I am saying now is that for smaller communities, one can separate out at the source and assuming that there are viable stable markets, can also be sold and the proceeds going to reduce the collection and disposal costs.

Let me wrap up by saying that in our view, the major weakness of the existing legislation has to do with the inability to provide the national and uniform regulations and standards which we feel can and should be implemented by the states. Thank you, Mr. Chairman.

Mr. HEFNER. Thank you, sir. Our fifth panelist, Mr. Bentley B. MacKay, Louisiana Governor's Council on Environment Quality. Mr. MacKay?

STATEMENT OF BENTLEY B. MacKAY, LOUISIANA GOVERNOR'S COUNCIL ON ENVIRONMENTAL QUALITY

Mr. MACKAY. Thank you, Mr. Chairman. I am a little bit nervous here today. I do not know how my testimony is going to come across. The Norsemen used to dream of Valhalla, the Buddists to dream of Nirvana, most people had to go into the hereafter to enjoy these types of things, but I am a professional garbage man, Mr. Chairman, and I think I have really reached it. I am in the halls of Congress and sitting before a group of which I see now professional garbage people in the group.

I would like to commend your committee and your staff for developing the type of thing you have developed. I mentioned to you before that maybe we are approaching an approach for a solution.

I was much gratified last night when Mr. Meyers said that if effective Federal legislation is passed that our solid waste problems would be over in 5 years.

Mr. MEYERS. Five to ten.

Mr. MACKAY. Five to ten years. It reminded me of when they excavated the Appian Way in Rome, they found a sign that said take your garbage a little bit further.

I listened to a lot of lawyers yesterday talking about how we are going to solve the solid waste problem. I have heard about source reduction, conservation, materials, and I do not know too much about that, but I do know about discarded materials.

As a matter of fact, I was kind of putting you on when I said I was nervous about being here because it would take me one pass down the back alleys of any town to know just who lived in that house.

Secretary Kissinger had that experience and it was publicized in the newspaper. We are a wasteful group of people. We do have problems.

A segment of our society feels that resource recovery from discard is essential and necessary. I have taken no official poll but I would gamble through my travels, and I am a writer for "Solid Waste Management Magazine" which some of you may have seen, and I do some extensive traveling.

I would gather that the majority of the people of our whole Nation are not concerned with the ultimate fate of the material they throw away. I have also concluded more are concerned with regular and effective collection services than care about disposal activities.

Waste collection is a personal service and few things can call down the wrath of the taxpayer quicker than poor service or no service. Our local politicians have been defeated and elected on issues surrounding solid waste management practice.

In comment, administrators always show some slight improvement in election years in collection practices. I have even heard that a major midwestern city, Chicago, passes out new and free garbage cans just prior to an election.

I have heard it said also that services can be slowed in an area that is represented by an unacceptable candidate. One thing you want to remember is that refuse service, like Federal grants, may be withheld to show political displeasure.

I think the Congressman from North Carolina can relate to that. If it is not incorrect to define garbage as a collective noun—as you listened to the panelists assembled, Mr. Chairman it is unquestionable that some of them will talk about economics, others about futures and perhaps a couple will talk about alchemy as trash becomes cash and garbage becomes gold.

I do encourage the State of New Jersey to develop an effective energy conversion program because the State of Louisiana supplies New Jersey with its gas. We would like to see them burn garbage instead of our gas.

A few years back the Environmental Protection Agency published a booklet from which there was a picture of the Ouroboros but it is a kind of snake that the medieval alchemists used as their symbol and it shows the snake eating on its own tail, a kind of perpetual motion thing.

Maybe we can develop that sort of thing in the waste disposal business. I really feel again that the staff of this subcommittee has approached this problem and should be complimented in assembling this group but I hope it is only the beginning.

The National Solid Waste Management Association, The American Public Works Association and other organizations with headquarters right here in Washington, euphemistically called lobbying groups that provide committee with data from people that have been involved with housekeeping of this Nation for years.

I certainly hope that my contribution would be worth while. Thank you, Mr. Chairman.

Mr. HEFNER. Thank you, Mr. MacKay. Just to comment to show you the esteem with which constituents hold their department of

sanitation in Members of Congress, on coming here, I had requests for different things.

Most importantly, a lady was very concerned about her garbage collection to which you alluded. She said there had to be something done about it. I did not feel at that time that it was a congressional or Federal problem so I suggested that she take it to the head of the sanitation department and she replied that she did not wish to go that high with it.

Perhaps that should tell us something of the magnitude of the problem of garbage pickup and disposing of our refuse.

Our next panelist is Mr. Arloe Paul, Wisconsin State Recycling Task Force. Mr. Paul?

STATEMENT OF ARLOE PAUL, WISCONSIN STATE RECYCLING TASK FORCE

Mr. PAUL. In early 1971, a number of concerned citizens in the State of Wisconsin, including some elected officials, approached Governor Lucey on the basis that something had to be done with the solid waste problem in the State.

It was recommended that he appoint a task force to make a study and to try to develop a real solid program. He appointed an 18-member task force in July of 1971, and I will say the task force was a great group of people.

They spent much of their company's money making more than 83 visits to various plants and facilities in both the United States and Europe to study the problem of solid waste. We developed a feasibility report and gave that to the Governor in February of 1972.

The main conclusions of that feasibility report was one, that recycling was not going to become a revolutionary thing. It would be evolutionary and a very slow evolution in our opinion.

We also believed that recycling was feasible. The technology is available, however without the markets, it does very little good to recycle the material. Those markets, therefore, must be developed.

Also in looking at the problems in various cities and counties in northwestern Wisconsin it is very sparsely settled; 42 percent of our population lives in seven southeastern counties.

In viewing what can be recycled and where does the economy come into the picture, we determined that about the minimum recycling facility would have to handle 1,000 tons a day to even break even.

To get 1,000 tons a day, you cannot depend on just one city to spend that kind of money which it takes to build that kind of facility. At the particular time, the county of Milwaukee was attempting to develop a solid waste program.

The city was trying another angle and 17 suburbs were trying to form one. The suburbs would not cooperate with the county because they did not want them to intrude in their private business, in the little communities and likewise the city and county were at odds.

After studying the situation, we decided that the entire program had to be handled on a regional basis. The regional basis could pay no attention whatever to city, county lines. In other words you had to

do it on a purely economical basis of transportation to the recycling center, and development on a regional basis.

Also it was determined that use of the recycling facilities must be mandatory once a region is established. Unless you can control that solid waste, you cannot afford to make the investment in the equipment to recycle it.

Our recommendation to the State was that they appropriate $200,000 to enable us to hire a board of engineering consultants and to develop a predesigned report for the entire State, also to create a statewide authority.

They concurred with the first, gave us the $200,000 and we hired a board of engineering consultants and they developed what we call our predesign report which was this type of a volume.

They actually, I would say in almost 100 percent of the instances, agreed with the task force findings. The legislature concurred with the board of engineering consultants and the predesign report confirming our task force recommendations was completed and given to the Governor in May of 1973.

The legislation was then developed to create a quasi-independent authority and that legislation was passed in March of 1974. I think one big advantage of that type of authority that we have is that the construction of the authority eliminates the political intrusion.

We found that in Wisconsin it was absolutely impossible to get a new landfill site started because everyone objected to their politicians and the politicians were afraid to stand up and fight for the landfill site, the engineers designated.

To give you an idea of the nonpartisan support of this bill, the house passed it by a vote of 69 to 29 and the Senate passed it by 29 to 2.

As we explained, as we travel around the State to support this legislation, we told the people that after all, garbage was not political. Once it went in the can, you could not tell whether it was Republican or Democratic garbage. It all went to the same place.

The Governor appointed a seven member authority in August of 1974 and a solid waste municipal problem was probably the one we were looking most at. It is difficult to secure landfills and the rapid increase of the cost of these landfills was just simply more than the communities could handle.

Mr. HEFNER. Thank you, sir. Our final panelist is Mr. Frank Raflo, National Association of Counties.

STATEMENT OF FRANK RAFLO, NATIONAL ASSOCIATION OF COUNTIES

Mr. RAFLO. My name is Frank Raflo. I am a member of the board of supervisors of Loudoun County, Va. and president of the Virginia Association of Counties. My county has 512 square miles, a population of 49,000 and 900 miles of public roads.

I am a native of my county. As a boy I fished in the Potomac River at White's Ferry—an important Civil War military crossing. My grandchild can no longer safely fish or swim there because beer cans, instead of boats, line the bank.

Just within the past month, in this year of bicentennial, we saw the State highway department erect a "Keep Out" sign at the most beautiful and scenic road wayside and picnic area on our major highway because of the abuse of the public who used it for a dump. We continue as a nation to foul our own nest.

But a container or package or can or a car once used still exists; it is not mobile and will not bury itself or disappear.

Our county is probably no different from others in the Nation. We are a part of the national sociological scheme that calls for generating containers and other solid waste potentials because that is how we prefer to have the products we buy and use merchandised.

Obviously this generation process is not going to stop because of public service announcements in the media pleading with us to "Keep America Beautiful."

At our level we have attempted a number of control programs. We employ an efficient sanitary landfill—the location of which is always a touchy political decision. We support a small and limited voluntary recycling effort.

We operate rural refuse collection containers as holding points on the way to the sanitary landfill burying ground—which incidentally is operated at quite a fiscal deficit.

We participate in the once a year clean up programs that get the political pictures in the paper but are effective for only the week of the operation.

Our county is one that passed a nonreturnable bottle ordinance which the courts have found to be invalid. We led the fight at the State legislature level to institute a statewide nonreturnable bottle law which when finally passed was watered down to little more than an industry dominated study to find out if there really is a problem.

The situation remains however, that people living in our county and people traveling through our county, under our present mores, are not oriented to have a major personal concern for what happens to the solid waste items which they either recklessly throw away or neatly package for us to bury, somewhere.

Policing the offenders who violate the litter laws has had little positive effect.

If then, the life style is not going to change, either by voluntary action or policing pressures, and at best the efforts to collect, bury, or recycle are a continuing battle of moving always to a second or third line of defense, is there any other alternative?

The suggestion I have comes from the point of view of a nonexpert who was a college English major, and has been a country newspaper editor and for more than 30 years a small town retailer, and part-time politician.

Is it possible to speed up the process to develop the technology of converting solid waste into an economically feasible resource that becomes a desirable product? This goes beyond simple recycling.

Maybe the answer is not to use the product over and over again for the same use but to convert it into some different use, such as paper into fuel.

Can we not develop the know how to gather our solid waste at massive collection plants, make the basic ingredient separation through

processes of weight or chemicals or new ones yet to be devised, and then to market profitably that which we have saved, or I might say created?

We must make a national decision that we will consider solid waste as a raw material rather than just plain garbage, a material that can profitably be marketed. The "how" will come after the national determination is made that the "how" must be found.

This may be just a dream of an uninformed citizen who looks at the mounting trash in his country and asks "why" but certainly it does not seem to be beyond the realm of our future capacities.

While this creative effort is being made, the interim problem of what to do with what we have now must continue to be attacked on the levels of control of creation of the waste material and the provision of facilities to do something with it.

In the final analysis, the local government can try to hide, bury, or send somewhere else the waste material but eventually they are going to hit the ground in someone's county or city.

The sought for solution must be a recovery process that will convert what has become a costly economic and social problem into an effective and paying solution.

As I stated I am a part-time local governmental official. As such I am a strong believer in local government. I also hold however that government should function at the level where the taxes paid and the services provided produce the most effective cost benefit ratio.

In many governmental activities I think that sought-for analysis is best achieved at the local level, but the problem of solid waste disposal comes to the local government only after it has come into being.

The solution, the development of new and meaningful uses for solid waste is a project for national attention backed up by a growing and genuine citizen and local government concern.

Thank you.

Mr. Hefner. Thank you, Mr. Raflo. We have about 45 minutes. We have another panel scheduled at 11:00. I believe that we have a very active panel here that has some very good ideas.

In hearings that we have had earlier on solid waste and some of the opinions that are shared by many of us that garbage and waste refuse should be considered as a resource, something that can be used by the country, but the problem with which we are faced is how do we accomplish this task.

I feel sure that there are many questions among this panel and gentlemen, if you would just like to take over for the next 45 minutes or so, if we get involved in questions, we can suspend the 5 minutes for each member for closing statements and have a very lively dialog.

If there is anyone who would like to start with a question or comment, we will just take them one at a time. Yes, sir.

Mr. Meyers. Mr. Chairman, I would like to ask a couple of questions, the first to Albert in the issue that was raised by Dr. Bardin with regard to the Pennsylvania County regulation prohibiting the importation of intrastate garbage.

The second question is to Mr. Bardin and that is with this mountain, mountain of trash, what will New Jersey do when they run out of landfill space?

Mr. ALBERT. With regard to Pennsylvania's statute, let me tell you that the city of Philadelphia was not in favor of that statute and did not want to see it passed but we have overcome that problem in this sense.

We just on Monday received the first bids on our proposed rail-haul system under a planning grant from the Federal Government. We will be able within the space of 8 to 10 years to make use of other counties' landfill sites in the Commonwealth of Pennsylvania, notwithstanding the fact that our Pennsylvania statute allows each particular county or area local government to preclude it if it wants to.

In a sense, it is a bad statute. It should not have been passed but it does not concern us right now. Our problem is what do we do in the meantime. This is the reason that the controversy with New Jersey has occurred.

New Jersey in a regional sense is an adjacent county to the city of Philadelphia, if you eliminated the Delaware and New Jersey Rivers, it would be a part of our metropolitan area and probably is part of our metropolitan area.

Our statute is bad and should be eliminated but it would not help us even if it was eliminated because we would still be 8 years away from an effective rail-haul system. Our problem is an intermediate problem.

One of the things I have noted to date is that we are essentially talking about ultimate solutions when the real problems with which we are face are media problems. The only answer on a temporary basis, I think, is the sanitary landfill situation.

Mr. BARDIN. If I may answer, New Jersey has in the last year enacted a new statute, chapter 326 of our public laws of 1975 which provides essentially for comprehensive regional land use, solid waste management planning which I will describe to you.

The State and county role also authorizes municipalities to sign contracts for up to 25 years for resource recovery disposal of their garbage. Always in the past there has been a statutory restriction to a couple of years on the ordinary—landfilling contracts.

The last point I think is very important because we find that the legal institutions in New Jersey, as is true of the legal institutions at the Federal level, have been counterproductive, have been encouraging what we think is continuation of bad methods and wrong methods instead of encouraging the movement to the right method.

The new New Jersey statute which still has to be funded, which I trust will be funded by legislation this year, would have the State assume responsibility for develolping an overall management plan in consultation with individual counties or groups of counties.

We recognize in our metropolitan areas we are dealing with more than one metropolitan county at a time whereas in a few rural areas remaining in New Jersey it may be one county at a time.

On a planning and regulatory basis, we will do under that statute what I gather Mr. Paul of Wisconsin has already done. The next question is who will build the facilities? In a few cases, there will be more landfills, but we are running out of that and will be moving into resource recovery.

There is a State agency called Hackensack Meadowlands Commission which operates in northern New Jersey, and is obliged by law to receive solid waste, to provide solid waste disposal for some 200 municipalities in northern and central New Jersey that has no entitlement under present law to demand that garbage go to its facilities rather than someone else.

That agency was to build first a bailing facility, then a resource recovery facility. Our tentative judgment, and I would be interested in hearing comments on it, is that the actual investment in resource recovery is one which does not necessarily require Government authorities or Government agencies.

Here is an area in which the private sector can make the investment and manage the investment under Government regulation and supervision. We have secured a very favorable ruling by the United States Treasury, and the Internal Revenue Service on the availability of pollution control bond financing for the total cost of a resource recovery solid waste facility.

We are aware of the problem of assuring a stable market, a stable source of materials to the resource recovery material but given that, our impression is that there are investors and responsible investors who would be ready to move into such areas as New Jersey which have abundant supplies of this resource to be mined.

I should say finally that New Jersey has not for years, but decades, been a leader in recycling. We have many scrap operations for steel, rubber, and others. As I talk to the people who run them, their basic problem is a very unstable market, it is boom or bust.

In some of the ways, they have some of the best paper recycling operations now going, Garden State Paper Co., but the price is high sometimes and low in others. Absent the use of Federal power to regulate the interstate commerce, the power to, for example, prohibit the use of virgin materials for certain areas just as now apparently the commerce power is being applied by the Federal Government to prohibit the use of recycled materials, in various areas.

In the absence of that, I find the people who own these facilities are willing to run them full blast whenever they have a market that justifies it but they are not willing to make the investment to spend the capacity.

It is very interesting, there are times when they are importing scrap into New Jersey as we welcome and encourage for recycling purposes, not only from outside the State, from outside the country, rubber for example.

Yet elsewhere, I know that people from all around the country have a very serious problem of what do you do with those tires and also the other junk that is accumulating in the river beds, fields, and everywhere else. The thing is out of balance.

Our upstate government has a big role to perform. I was very much moved by the profund comments of the county director, Mr. Raflo, from Loudon County. I have the same impression talking to my county people in New Jersey and the municipal people, that here is a problem of disposal they would like to see solved, at least in large part at the State level, not the Federal, rather than maintain the home rule traditons of New Jersey in that respect.

However, they really need help. One final observation on what we are going to do which again goes back to Mr. Raflo's remarks about the Potomac River.

Our conclusion with the new New Jersey law is that we have to tie solid waste planning to phase out the landfill's closely to the water resources planning, the river basin planning.

The worst pollution we are suffering is the leachate and some of it is really very bad, entering the streams of New Jersey from old dump and landfill operations. That is something that seems to me to be one of the areas where you want to consolidate and make sure you are not just dealing with solid waste disposal in the abstract in the case of water any more than you do in the relationship to the air.

Mr. MEYERS. Let me just answer that last point. Within the last 2 to 3 weeks, the official at EPA who is responsible for 208 planning in the Solid Waste Office signed an agreement to make certain that 208 planning and solid waste planning are done in a way that they complement each other by responsible technically trained people.

We are aware of that problem. The agreement has been signed and will be sent out to our regional offices this week.

Mr. BARDIN. That is very helpful. I want you to know also that your EPA region II, in the case of air, has at least been talking in favor of using the incineration technique but coupling it with energy exploitation rather than just incinerating as a disposal matter. It is not so easy.

In New York City, not in my jurisdiction, but on their side, you find popular resistance to switching the existing ongoing incineration by the city into an energy exploitation by the power companies.

Mr. MEYERS. That is because it costs money.

Mr. HEFNER. Mr. MacKay?

Mr. MACKAY. Mr. Chairman, I think it would be interesting for the education of your staff and so that we could take a little poll here and see how many Government employees are in the audience, how many consultant types and how many people are chasing the Federal dollar?

Mr. HEFNER. I do not know if it would be out of order or not. It is not on the ordinary procedure that we follow in this committee.

Mr. MACKAY. I told you this was my first one.

Mr. HEFNER. We would have to leave that to the discretion of the members in the room as to whether they would care to be counted.

Mr. MACKAY. Let us pass it sir.

Mr. HEFNER. I think we should just pass this. Perhaps it does not relate too much to what we are trying to get at.

Mr. MACKAY. Then I have a bonafide question that is addressed to Mr. Paul. Arloe, through the years that you and I have watched these people chase grant moneys for construction of the plants, what of the percentage of the plants that are shown for instance in this magazine, the two pages of NCR survey, are effectively operating in energy production, and what plants are effectively operating in recycling, to your knowledge?

Mr. PAUL. I do not think I can answer that because I have not looked at the list and I would have to study them and be up to date on it.

Mr. MacKay. Then perhaps Mr. Meyers can tell us.

Mr. Meyers. You can look at the list and it tells you what the output is, for the tonnage. It also gives you the status. It is written down there.

Mr. MacKay. Last night we heard about the St. Louis project.

Mr. Meyers. St. Louis is a demonstration project which is intermittently operated. It proved a point, as a result of that particular plant Ames, Iowa, built a very similar plant which they now use for partial disposal of their waste. It operates continuously.

The Union Electric Co. is considering building a 6,000-ton-per-year plant that they are in the process of designing right now. The city of Chicago is also thinking about a rather large one.

However, that particular St. Louis plant served the purpose for which it was intended.

Mr. MacKay. I also heard about the Nashville project where they are converting waste into all kinds of things and about the Baltimore project which caused——

Mr. Meyers. The Nashville project was a locally financed one. There they got into problems. The initial estimates of cost were such that it had certain components in it.

As they proceeded down the stages to design and build, escalation in terms of inflation and unforseen things came about. In order to remain within budget, certain things were cut out of the plan which made it less desirable as an operating entity when it finally got built.

The Baltimore plant is a demonstration plant, the first of its kind, a rather large scale. There were problems that were envisioned when we designed and built it. There were still problems that did materialize when it came out.

The stage at which it is now is that the mechanical components are being redesigned and reconstructed. The last remaining problem which is one that really cost money, installation of air pollution control devices to take care of the particulate emissions.

Mr. MacKay. Mr. Chairman, the point I am trying to make is that I am opposed to seeing the Federal Government go into an extensive grant program, for the construction of yet to be proven systems, no matter how they may look in the future.

I know my friends in Baltimore wish they had never seen that monster that is there. It cost about $20,000,000 and it is still not operating. The Federal influence on solid waste management I would prefer to see in a big brother role than in big daddy.

This is the way I feel it should be except in hazardous wastes.

Mr. Hefner. Thank you, Mr. MacKay.

Mr. Bardin. If I could just comment on this.

Mr. Hefner. I just have a question here on my behalf. I agree with you, I find it at times to be distasteful to some of the things that our committee and full committee are involved in and have to make decisions and pass legislation for something as clean air and involvement with the railroads, making decisions and this area in getting into legislation that affects States and affects the corporations.

I find at times it is confusing and distasteful. The thing we are trying to arrive at, we realize we do have a problem in this country

with our garbage and wastes. It continues to grow with a society such as we have.

What we are trying to determine is what role the Government should have. I would like to ask Mr. Paul or Mr. Raflo, how can the Federal Government, State and local governments cooperate to solve these problems, to come to some kind of an agreement, something that would get at the heart of the problem where it would not be legislation we have passed and find in the future we have come up with an unworkable monster as you mentioned it and get into areas that were not productive.

How can the Federal, State and local governments work together to get at the crux of this thing?

Mr. Raflo. Mr. Chairman, if I may, the suggestion was put that the purpose is not to wax philosophical but not having a graduate degree in grantsmanship and not being a chairman of a committee that deals in billions, I cannot discuss the major grant programs.

The philosophical solutions are really the concerns of the Federal Government; to be purely philosophical, Government is a means by which the services the people want are paid for by taxes.

I was in the retail business and it is a buying and selling process. If I can get away from the total vision to just garbage, where—one of the things people want, they want water to drink, a toilet to flush, a school seat to sit on for their kid, a road or a train, fresh air to breath, a job at which they can work, a house in which to live and food to eat.

The basic question is if Government is going to provide this or assist in the provision who will provide these services and at what level?

I think that is what you are talking about, can the rest be provided.

When I said get away from total vision, the problem is a little bigger than what you do with garbage. Garbage comes from people. The number of seats in a school, the number of toilets to flush is tied to how many customers, how many people.

That puts the question back to where will they be and when will they be and how many? I raise the question that land use management in its total concept is the basic problem. Our problem is too many people, in too small a place, too soon.

What I think we need is to redetermine at what level of Government should services be provided that they can most effectively be provided. I could spend hours explaining, just in our small county, how grant after grant after grant have cost us only money, not time and frustration.

I can talk about water systems because they were delayed waiting for an EPA cost made our local costs greater than everything else. What I am really trying to say is that local government wants to accept its responsibility.

Local government wants to do its own job, given the opportunity. The matter of technological advances to make solid waste useful is one thing that is beyond our local capability.

You show us how to do it and then let us do it. We do not really want to forever stand in line and say give us the Federal dollars. We would like to be a cooperative partner frankly.

We think given the opportunity, we can do it best but again on solid wastes, we think the Federal Government's position is that of trying to develop the national attitude that will create the technological knowledge.

Once you have the knowledge, say to us, now you know how to do it, boys go on and do it. Does that try to answer our local question?

Mr. HEFNER. I think it answers some. It gives us a good theory to operate on. Mr. Paul, did you have a comment?

Mr. PAUL. I would have to go back to the way we approached the problem in Wisconsin. I think we approached it on a purely practical basis. In the bill itself, it gives us the authority, complete mandatory control of all solid wastes in any developed region.

Once your region is assigned, the authority has control of the solid waste. We do not collect the solid wastes; that is left up to the individual communities or the county as a whole.

The counties with which we have worked are putting in green boxes and the like, they will deliver the garbage to a transfer station which will then go to a main recycling center.

The State gave us $500,000 as a startup money to hold over the authority until we could get the first region going. They gave us bonding authority for $16,500,000 and this will not be general obligation bonds. They will be bonds of the authority which will be paid off by the revenue produced.

Where does the revenue come from? The revenue comes from two places, the dumping fee and the sale of material that can be recovered. Against those two incomes, we have expenses and those are of course the cost of operating authority, the cost of capital repayments and interest, in other words, the bond problem, and the other, the operation of the facility as well as maintenance.

These bonds must be self amortizing. For that reason I do not think there is any need for the Federal Government to start a fantastic grant program. I think they should develop a means of disseminating guidelines as to how this job can be done and let the States do it.

I hear so many people say we will get some money from the Federal Government, it is not free. Somebody has to send that money to the Federal Government just to send a dollar and get back 60 cents.

Why not do it yourself. I believe this can be done on a regional basis. I think the Federal Government could help develop the markets but mainly to issue grants to small communities to each of them to develop a program I think is an absolute waste of money because we would just be reinventing the wheel over and over again.

There should be a national policy and guideline that they can go to. I think you could secure a tremendous amount of information and knowledge from the ones operating now.

There is the little town of Ames, Iowa who for $5,500,000 they built a facility that will handle about 250 tons a day. It is operating economically. They take all the garbage from the city of Ames as well as all the other small towns in the county now.

They are expanding and have enough capacity that they are now negotiating with the town of Boone which is in another county west

of Ames, which is even larger than Ames, and they want to keep the plant going.

They take out the iron, aluminum, glass and the light fractions of their own powerplant so the light fraction is all fed over there for fuel. They charge the rate against the light fraction, the equivalent to the cost of fuel.

In other words, as you know, garbage has about 5,000 to 6,000 British thermal units per pound, where coal is about double that, so the garbage fraction should bring about half price that of coal.

Against that, I think you have to allow the utility to write off the cost of conversion because there is going to be some involvement there and it runs into pretty big dollars in a hurry.

I do not think in our study of the problem that grand daddy, Uncle Sam has to solve the problem for us. I think we are becoming too dependent on the Federal Government and the Federal Government can be a big help, but I would hate to see them start financing these plants because they will finance a lot of failures.

I think you should make the local unit responsible and if they cannot be responsible in developing an economic unit, then they should not be in the business.

Mr. HEFNER. One question. Your plant in Iowa, what problems would they encounter if they expanded to an even larger plant and began to take refuse from Nebraska and Kansas, if they went outside the State lines?

Does this present a problem as far as commerce is concerned?

Mr. PAUL. I do not think so, but the limiting factor there would be the cost of transportation. Again, it is economics. We believe from our studies that you can only transport garbage about 20 miles.

If you get beyond the 20-mile range, the cost of transportation just prohibits the transfer of garbage much further than that.

We believe you can build facilities where you can produce 1,000 tons a day and now there are some plants being designed and some companies are coming into the field with new equipment which I believe will make even the plant, maybe 600 or 750 tons a day feasible.

These smaller communities can then use them. You cannot let a big city go out and build a recycling plant and leave the suburbs and the small unpopulated areas hanging out there on a string. You have to put them all into the region, in my opinion.

In order to totally do a job of recycling, you have to do this.

Mr. MEYERS. I would just like to point out that EPA, for example, is not at all proposing a massive construction program. As far as I know, nobody in the administration is either.

What we are talking about is selective demonstration. That for the purpose of proving technology so that the risk is taken off the local communities. There is no reason why each community has to reinvent the wheel each time the subject of resource recovery comes up.

I think that is best done nationally one time and the information disseminated. I would like to just point out the issue we have already raised, the St. Louis demonstration we did run starting in 1969 which is essentially over.

That particular project cost the Federal Government $2,600,000. As a result of that, Ames, Iowa built their plant at a cost of about $6 million. The city of Chicago is building the same plant at the cost of $20 million. The city of St. Louis is building a $70 million, the same technology.

In my view that is the kind of thing about which we are all talking and that is just what we proposed.

Mr. PAUL. As I understand the proposed legislation, as I read it, they were talking about issuing grants to cities or countries and these grants would be to develop the solid waste management program.

For every little community to develop on their own a solid waste management program, is a waste of money because EPA should be able to give them the guidelines.

Mr. MEYERS. The grants about which we are talking, to the States, not to every little community.

Mr. PAUL. The State would then disburse——

Mr. MEYERS. However they choose. We are talking about a program with essentially minimal Federal intervention, a program whereby the burden of effort lies on the States to develop that which makes sense for them.

Mr. PAUL. I think you are going to have to continue some of these grants for research and development because there are going to be other ideas coming along which are not on the horizon today and someone's going to have to test them. The Federal Government should take that role, in my opinion.

However, I do not think the Federal Government should make grants to communities, cities or even counties for the development—I think it can be done on their own if they will take the initiative and grab the bull by the horns and do something about it.

We certainly are doing it in Wisconsin and in Milwaukee they are now building an $18 million plant which is very similar to Ames and that is being built by private industry.

Mr. BARDIN. The Federal Government really has a choice to make beause there are two roads you can go down. In one, you can find the Federal role of whatever it cost to plan, give direction and regulate but not to construct the high cost equipment except in research or demonstration projects which tries to advance the technology.

In the other role, you could get heavily involved in the construction of facilities or at least financing it. The way the Federal Government has done in the case of the sewage facilities, the water sewage, is a good example.

We have a comparable, analogous question at the State level. In handling it thus far, my druthers have been very strong for limiting the investment at the State level, and by analogy, I would say at the Federal level.

In doing so, we have reasoned as follows. That solid waste after all is not—there are fuller facilities, really cost less for the country and State as a whole, and there is the potential for private investment on the one hand or municipal investment on the other.

If you rely on municipal investment however, you have to face the fact that you are up against a whole bundle of problems that major municipalities have today in financing all kinds of things and those problems are getting worse.

You notice the Wall Street Journal yesterday predicted by the end of the century most of us will live in the major metropolitan areas. That comes as a surprise to me but it certainly is consistent with what seems to be going on in many parts of the country.

In New Jersey, Governor Byrne made the decision that what we would do on the regulatory and planning side is to take solid waste management from a subordinate group to put it on a level with the planning and regulation for air pollution control, air quality maintenance on the one hand and water pollution control.

So we have an administrator who talks as an equal within my super agency with the other facilities, or the other administrators. I think that is a technique which may be worthwhile in order to get any effective lobbying voice at the Federal Government as well as the State for those changes in regulation, those changes in law, those changes in institutions.

That will make the mater manageable. In a nutshell, it seems to me that if the Federal Government continues its policy of hands off which in fact is a policy of subsidizing the generation of more and more solid waste, it is a policy under which interstate commerce in the end ships more solid waste to various people without regard to the particular law suit or the particular problems.

I am talking about the virgin materials, the freight rates, the proliferation of packaging, and the rest. If that is to be the regulatory stance of the Federal Government, I predict to you, I do not advocate, in fact I am not happy about it as a taxpayer, but I predict to you that within a very short time you will be in the same position of Federal financing of solid waste disposal facilities that you are already in the financing of water waste disposal facilities.

Quite frankly in a country as huge as this it is very, very difficult to manage one of those programs in Washington. I strongly urge you to participate in regulation of interstate commerce, saying no to some things, shaping by guideline or prohibition what gets done, and thereby avoid the need for deep Federal budgetary investment in the solid waste facilities.

Mr. Hefner. Thank you, sir. We have approximately 11 minutes left. One question for Mr. Kiechel. What is your opinion on the New Jersey ban and do you believe the ban interferes with commerce?

Would you care to give us——

Mr. Kiechel. The question is going to be decided by the Supreme Court of the United States. I think it would not be productive to try to predict that. I think the significant thing for the purposes of this discussion, is that the matter has been brought to the Supreme Court.

Mr. Hefner. Thank you, sir, for your nice answer there. Is there anyone else who would like to be very brief? We want, in the interest of time, everyone to be heard.

Mr. PAUL. I have a question. As I understand it the IRS is now proposing that they will eliminate the tax exemption on bonds issued by State, county, or municipal authorities unless those authorities are elected officials.

I think that would kill your solid waste recycling efforts quicker than anything else that I know of. I think the one thing the Federal Government can do, they have to make sure the tax-exempt bonds for recycling can be tax free.

I think we have to be able to enter into deals with private enterprise and that in this the authority could lease the facility to private enterprise. They should have the right to take the tax investment credit. They should have the right to take the depreciation and in Wisconsin, our authority will pay no local or county taxes.

We will pay a sum in lieu of taxes for fire protection and that type of thing. I think that is one area in which the Federal Government could be most helpful in preventing this taxation or elimination of tax-free bonds for our facilities.

Mr. HEFNER. Mr. Raflo?

Mr. RAFLO. If I may, just tell a quick story because it deals with the subject of Federal help as opposed to Federal dominance. It is not exactly related to solid waste but it is a very quick one.

The Federal Voting Rights Act—you will recall anytime there is a 5-percent minority in a particular political subdivision, they must have their name on the ballot.

It came to light that a county in Virginia had 5 percent Chickahominee Indians and the ballot was not printed in that language. The Federal Government stated you have violated the Federal Voting Rights Act.

The county said we are very sorry, we would be very happy to print the ballot in that language, if we do indeed have 5 percent natives living in our county. The question was that nobody in that county had ever spoken or written that language for 50 years.

I think that is part of our problem. We want to cooperate and help but so often the standards, I feel, when they are written do not represent what the Congressmen really feel they voted for when they voted for it.

I think if I may mention 208, we are told in this that 208 had its inception and considered the possibility of diapering the cows when we were talking about pollution. This is the type of thing that we in local government are concerned with, the magnitude of control, the magnitude of detail which prevents us from doing what we think is our own job and our own responsibility.

We do not look upon the Federal Government as some enemy or the State government as some enemy. We would like to work together. The basis should be who can do it best and where will the cost benefit ratio be most effective.

Mr. HEFNER. I think the Federal Government has cooperated with those that recycle paper because I think they have contributed greatly to that, some $20 billion a year for paperwork.

I think they have been cooperative in that. However, I do not think that is exactly what we had in mind. Anyone else very briefly? Mr. MacKay?

Mr. MacKay. I have one for Mr. Raflo. In your county and in Virginia, or in Richmond especially, it was brought up yesterday as having a terrible landfill that caused houses to blow up and I naturally took the side of the landfill.

Our problems are not related to landfills and methane gas production and houses blowing up but are related to developers, engineers and architects.

The problem of throwing material around in your county as you described, can that be just legislated out, just tell them do not throw it out there?

Mr. Raflo. To be very specific, getting back to the little wayside. There is a law against throwing it out on the wayside.

Mr. MacKay. They throw it by the side; don't they, sir?

Mr. Raflo. They have a sign; they have a law; but short of sitting as deputy sheriff there—I even went to the point of going through the trash—as has often been done—to find whose letters were in the trash.

I found that unfortunately some of the local people living 3 miles down the road were the ones who were guilty. I do not say local government is perfect. Local government should accept its responsibility.

The landfill should be run properly. For example, we are about to spend $50,000 burning some trash according to State standards. It has been suggested that some members of the board might go down there one night and just set it on fire and save that money.

The answer is we should do it right and if it is not done right, then we should not object when somebody uses force.

Mr. Hefner. Gentlemen——

Mr. Bardin. We have been talking about local governments, county, State and Federal Governments, just one comment about people. We are all people, we are not perfect. I believe each of you has at some point discarded some litter where he feels in retrospect he should not have done it.

The other side of the coin is please do not underrate people and do not underrate our fellow citizens. I am convinced from my travels around, at least in my State, which has many beautiful and unspoiled areas, that people want an effective program to deal with solid wastes, even if it is a little inconveniencing and expensive to them.

I have just gone, in the last 2 weeks, from my own annual appropriations committee, before my joint legislative committee. The only real sharp criticism that I had thrown at me was the one demanding more action to come up with affirmative, positive, effective programs to deal with solid wastes.

I think that is where the people at all levels, at head of government, where municipal governments are perhaps.

Mr. Hefner. Thank you, sir. We would like to thank you distinguished gentlemen for being with us and the proceedings of this symposium will be printed within the next 3 or 4 weeks.

The name of the Indians, Mr. Raflo, were?

Mr. Raflo. Chickahominee.

Mr. HEFNER. It will not be printed in Chickahominee, I might add, but the proceedings will be presented within the next 3 or 4 weeks. Copies will be made available to the public.

At the back of the room or just outside the door are some suggestion forms. If you will fill in your name and address at the bottom of that form, with or without suggestion, we will make sure that you are mailed a copy of these proceedings as soon as they are printed.

I would like to thank you gentlemen for being with us and bringing us this very helpful testimony. It will all be on the record for the benefit of the subcommittee.

The next panel will be at 11:00 a.m. and in this room. It will be very interesting. Thank you all for coming.

[Whereupon, the 3d session ended at 10:56 a.m.]

Technology, Trash, and Cash

FOURTH SESSION—11 A.M.

Mr. Rooney. The fourth session of the Congressional Symposium on Resource and Conservation Recovery will be dedicated to the alternative methods of disposing of our discarded materials.

A large portion of our waste is presently landfilled, and there is not doubt that we will continue to need landfill to dispose of at least some of our waste in the future. There are, however, alternatives to that method which represent ecologically sound ways of disposal and which have the added benefit of increasing our supply of materials and energy.

This discussion will be devoted to an examination of those alternatives and the factors which recommend them or fail to recommend them as solutions to our waste disposal problems.

During this discussion we will address in a general way what we mean when we speak of the various disposal methods: What constitutes a sanitary landfill as opposed to an unsanitary landfill, or an open dump? What is pyrolysis and how does it work? What are the various systems for recovering energy directly from discarded materials?—and, How are companies and communities presently reclaiming valuable materials from our industrial waste and municipal refuse?

Equally important: What are the requirements for the various systems to work?—and, What kind of problems have been encountered with those systems now operating? What is the potential for economic viability of the various disposal and recovery methods' without subsidy from some other source?

These are the questions which must be addressed in order to come to a full understanding of the state of the art of resource recovery and discarded materials disposal. These are the questions which must be answered before additional companies and local governments make the substantial commitments necessary to implement any of the disposal and recovery techniques which seem to hold promise.

With us to discuss these questions are several gentlemen who are directly involved in the planning and operation of various systems of discarded materials disposal and resource recovery.

At this time, we would welcome to the committee, a former colleague of ours who is now the mayor of Nashville, Tenn., the Honorable Richard Fulton.

Mr. Fulton. Thank you, Mr. Chairman.

Mr. Rooney. I know from my committee report the committee staff did visit Nashville and were very impressed with your disposal system there. I hope that the members of the committee will have an opportunity in the near future to visit Nashville, Tenn.

71-179—76——6

Mr. FULTON. It is always a pleasure for a Pennsylvanian in Nashville. I certainly want to compliment you on your continued farsighted leadership and say that I feel right at home behind the familiar rostrum, only having been gone now for 8 months.

I made the statement in Nashville several days ago that having been mayor for 8 months, I feel like I had been on vacation from Congress for 13 years. I want you to know that is no reflection on the Congress at all, it is just that local government does have many challenges and what to do with solid waste is indeed one of the most challenging problems we have.

I compliment your committee for the work they are doing, Fred, and I am very pleased that Mr. Ben McDermmott is a member of the panel. He is a director of our Nashville Thermal Heating and Cooling System and it is one of a kind in this country.

I think we are the only city that has the solid waste disposal system that is utilizing both heating and cooling in many of our downtown office buildings. Thank you for allowing me to be here.

Mr. ROONEY. Thank you. Our first comments will be from two panelists, Mr. Robert Kaplan and Mr. Harvey Yakowitz of the Office of Technology Assessment. You may proceed, gentlemen, in any order which you desire.

STATEMENT OF ROBERT KAPLAN, OFFICE OF TECHNOLOGY ASSESSMENT, U.S. CONGRESS

Mr. KAPLAN. Thank you, Mr. Chairman. My name is Robert Kaplan and to begin with, I would like to tell you very briefly about OTA's mission. We are an office about 4 years old that was established by the Congress of the United States to provide free information to Congress in the area of technology.

We are engaged—Harvey Yakowitz and myself—in a study on materials recycling to determine as best we can the financial, institutional, and technological areas of implementation and try and indicate potential legislative options that Congress might follow and their impacts.

To begin with, I would like to describe the technology as we currently see it. In assessing technology, we have found it necessary to differentiate between an engineering problem and a processing problem.

There are demonstrations around today, Baltimore is probably the best example, which are beset by engineering problems. They do not, however, indicate that the process is good or bad.

That remains to be determined. We view shredding and magnetic separation as a state of the art. You can buy any one of these operations from a supplier and install separation essentially off the shelf.

We view as emerging technology, pyrolysis, the use of refuse derived fuels, aluminum recovery, source separation to some degree, the area of glass recovery and paper recovery as a reusable fraction.

We believe at least in terms of good waste news. We believe it remains to be developed as a technology. Congress needs to deter-

mine where the research and development demonstration funds should be placed and what the requirements for these funds are, before it sets appropriations.

It appears to us inappropriate to authorize and appropriate large amounts without having a clear idea as to what this money would be used for. Many people have appeared and said the technology is available.

Many people have said we need massive infusions to develop technologies. We see a few areas where technology for separation needs to be demonstrated. I would like to give you three examples.

No one has yet demonstrated that indeed source separation can or cannot live with a high technology plant, and yet if you were to try to go out today and put up a plant to recover everything in urban refuse or municipal solid waste, you would run into some of this unproven technology.

Therefore, it appears that a system in which paper and glass are skimmed by source separation magnetics, aluminum and RDF by high technology could benefit from a look see. Others have proposed that souce separation is a viable answer.

However, if you were to source separate all of the glass and all of the waste news, this still would leave behind at least 50 to 60 percent of the refuse which still would have to go to the landfill.

The question that needs to be answered is if you carry out such an extensive source separation program is there a use for the remaining 50 to 60 percent of the material. A third high technology area, one with which I am familiar, is the residue process, subsidiary residue process.

This process is assuming more importance today because of the interest that is being expressed in water wall incineration. Although it was scheduled for demonstration, plans fell through because of the poor incinerator and other problems.

It still needs to be proven on a large scale. In summing up, before I pass the baton over to Harvey here, I will talk a little bit about markets and the uses. I would like to respond to the comments that we heard yesterday about the need for legislation.

I think legislation which will support research development demonstration and which will provide for some forms of financial assistance to be determined by Congress is necessary now.

It would be a shame if 3 or 4 years from now when the current demonstration program has been completed and viable technology has been demonstrated, if at that point, Congress found itself in a crisis situation having to rush ahead without due consideration, and implement programs.

This is the time when Congress can very carefully and is very carefully considering what to do. I hope it will reach a decision. Thank you.

Mr. Rooney. Thank you, Mr. Kaplan. We will now recognize Mr. Harvey Yakowitz for 5 minutes. After the panelists finish their 5-minute opening statements, we will then open the meeting to discussion.

STATEMENT OF HARVEY YAKOWITZ, OFFICE OF TECHNOLOGY ASSESSMENT, U.S. CONGRESS

Mr. YAKOWITZ. Thank you, Mr. Chairman. My name is Harvey Yakowitz. I work with Bob Kaplan at OTA, as he told you. I look at things from the point of view of, do they balance, what is the equation.

Perhaps it is a bit of a pit and pig way of looking at it but the equation has two parts. One is that we have a waste disposal system, the other is that we are attempting to close the material cycle to obtain materials which have been shall we say wasted.

From our travels and what we have read, it begins to appear that the cities look at the waste disposal end of the equation when they say we have to get rid of it. I do not think anybody would dispute that.

If getting rid of it can also entail bringing in some of the resources and thereby reduce the fee the city must pay to dispose of the trash, which is commonly called the tipping fee, that which one pays to tip off his garbage or refuse somewhere, then the city is interested.

So the equation looks like this. When the disposal fee is very high, as it is in the urban Northeast, and where landfill is running out, then resource recovery which also carries a high disposal fee by 1976 standards, becomes a very viable option, from the point of view of the local government.

On the other hand, if one is sitting with lots of landfill space and it is only costing $1 or $2 per ton to dispose of the trash, then the mayor must ask the question and the council must ask the question, why should I go into a largely capital intensive region or process which may in fact increase my tipping fee?

This is the equation at which we are looking. That is, what do we do about that particular dichotomy. All right, as we have heard, the Wall Street Journal has indicated that many of us will be living in metropolitan areas very soon.

It is the large metropolitan areas that can in fact make very good use of resource recovery. The lowest tipping fee we have heard so far is $9 per ton. That is in Milwaukee. That was quoted to us by the Americology people.

That is for resource recovery plant. On the other hand, landfill costs in Massachusetts run up to $18 per ton. Therefore, resource recovery is viable in that situation on a pure economic basis.

What is being talked about is a large Federal infusion or intervention may not be exactly what the cities desire. We have heard some of that. But one thing the cities have told us they do desire is what we have found resource recovery assistance and government teams that comes out RATS but I realize the other choice is planning and implementation groups and that was not satisfactory either.

The cities want these from the Federal Government to tell them please what is the situation with regard to the resource recovery option with regard to environmental requirement, landfill requirements.

We believe that such an assistance team could in fact be very valuable. It will be reasonably labor intensive. You are talking about an appropriation of $5 million to $6 million per year to support 100 people, to travel about in teams to aid cities.

The information transfer in this case is efficient. EPA is doing it to some extent with the city of Detroit. The city is very happy with the way they are getting aid in that way.

The results are no direct financial responsibility on the part of the government other than to pay its own employees. Furthermore, if the government has a financial backup of any kind whichever it may be, to have the resource recovery assistance teams on the sites, at least you are getting input as to whether or not such a project is viable.

Many of the objections we have heard to the injection of Federal money is that unviable projects may in fact obtain money. We have heard a lot about the markets. Clearly you cannot eat the materials if you produce them, if you decide to go resource recovery.

What are the markets? We hear the cry we must have stable markets. One of the things we hear is energy from waste is a very useful item to have and it is going to replace oil.

We hear the quotations in barrels of oil, in fact much of the energy from waste as we know it, will replace solid fuels, namely coal, indirect substitutes.

A question was asked why perhaps do utilities not want to use energy from waste? Perhaps one of the answers is that if the utility is vertically integrated, owns its own coal, has a cost pass through adjustment and requires a $60 million to $90 million conversion to use energy from wastes, that kind of utility becomes nervous because it is by law required to provide electricity on a reliable basis.

On the other hand, if the utility feels threatened about its supply, such as some of us in the Northeast would depend upon imported oil supplies, then that utility may in fact be very happy to replace some of its supply with energy from waste and such a thing is happening in the State of Connecticut right now.

Other market situations are that aluminum and steel markets appear to be reasonably good. The steel and the ferrous fraction can be sold from small communities as well as large metropolitan areas.

The city of Beaufort, S.C. sells its steel to a company in Wilmington, Del. and ships it about 700 miles. They put it in a shredder, in a magnetic separator and the total capital cost to the city was half a million dollars. They are selling the steel at good prices.

Aluminum mostly comes from what is euphemistically called malt beverage cans or beer cans. That is mostly where the aluminum appears. It is concentrated in certain areas of the country; to obtain aluminum, a high technology plant requires fair capital investment and so it should be looked at carefully, in individual cases and the desire to obtain aluminum should be looked at very carefully in individual cases where you can get it, it can always be sold.

I will conclude then by just reiterating what Bob said, in a couple of years, resource recovery plants will be operating in this country. In fact, there will be one in a few months.

Congress is in a beautiful position right now to indicate what the Federal role should be, to delineate and set a guide for the country in that direction. Thank you, Mr. Chairman.

Mr. ROONEY. Thank you, Mr. Yakowitz. Now we will hear from Mr. Richard Scudder, president of the Garden State Paper Co. of Newark, N.J. You are recognized for 5 minutes, Mr. Scudder.

STATEMENT OF RICHARD B. SCUDDER, GARDEN STATE PAPER CO.

Mr. SCUDDER. Thank you, Mr. Chairman. The question of markets is an interesting one and a vital one; in my business we use old newspapers and make them into new newsprint. We would be entirely willing to build a mill anywhere where a supply of 300 tons of wastepaper a day was assured.

The problem in the expansion in this area is one of acquiring enough waste newsprint at a time when some time 80 million tons of it go every year to the dump. I would like to address myself particularly to the contrasting use between burning this material in the plant that will be built and to its use as old newsprint.

I think the first thing to understand is that we do not have an energy shortage, we have an energy crisis. That is a matter of semantics to be sure, but what shortfalls we have in energy are going to result from a matter of choice.

We have more than enough coal, oil, and gas to supply our energy needs for many years but we have chosen, for reasons that are probably valid, from both an environmental and cost standpoint, not to develop those coal resources.

The same thing, we think, is true of wastepaper in the garbage. I am going to address myself particularly to old newspapers because if I have any kind of expertise at all it is to do with old newspapers.

What is true of old newspapers is also true of high grades of corrugated and things of that sort. I think it can be established in a way to satisfy most judgments that it is more beneficial from an environmental point of view to use old newspapers as a recycled product than to return them.

There is more advantage from an economic point of view to reuse them rather than to reburn them and that in the long run the energy balance itself is aided most by using them as older newspapers recycled instead of burning them.

You all know I am sure that it has been the position of EPA for many years that recycling old paper is preferable to burning. I think the reasons for EPA's preferences is quite clear.

First, when old newspapers are recycled into newsprint the waste paper is not destroyed. It is still there and can be used next time for burning or it can be used again for recycling and again for whatever.

In other words, the useful life of the resource is extended. Second, you have all heard the one about recycling, saving trees. Of course, it is true. A good many people today think that trees themselves are going to play an extremely important role in the energy balance.

While forests occupy one-third of the area of the United States, I think most professionals agree that the lines will cross in which use is going to exceed growth at sometime in the eighties.

This, in part, is the result of the lack of a Federal land use policy. It is because over half of the commercial woodlands are privately owned wood lots, it is because assessments on that land are increasing. It takes maybe 20 years to get a crop return from trees. Who can wait?

It is interesting when we talk about a fuel shortage that the use of steel joists in construction require 50 percent as much energy to create as a wooden joist and the use of aluminum for outer siding requires 20 times as much energy as wood.

The question is going to arise if we are going to be short of energy, can you afford to spend 50 times as much for these or are you going to use wood? There are other extremely sophisticated uses of wood.

A percentage of our oil now goes to make synthetic products. You can make acetone and ethyl alcohol and butane from wood. You can make glucose by hydrolysis of wood. What I am suggesting is that if there are going to be many uses of wood, we had better recycle what fiber we can and save it and save trees.

Of course the diminishing wood supply is going to have an effect on everybody in the cost of their housing, in the cost of paper and everything else that is made of wood. As to energy, the point is that it takes 25 percent less energy to make a ton of recycled paper than it does a ton of standard newspaper.

Assuming the United States is going to continue to use newsprint, you can save an awful lot of trees if that material is made from recycled paper. In rough figures, it takes the energy of 1 pound of coal to make 1 pound of newsprint.

The energy in a pound of coal is about 12,000 B.t.u.'s. So the energy to make a recycled ton of newsprint is 9,000 B.t.u.'s or a saving of 3,000 B.t.u.'s. If I say tons some time, I really mean pounds. We are not used to thinking about pounds.

Each pound of waste newsprint used as energy in garbage has about 6,000 B.t.u.'s or we will say half that of coal, assuming that it has a standard moisture content of about 10 percent.

Accordingly, it would take 1½ pounds of old newspapers used as fuel to make 1 pound of used newsprint recycled into newspaper or if this material were used, there are all kinds of games you can play with these figures.

If it were used to make fresh newsprint, you would need 2 pounds of this material, 12,000 B.t.u.'s with a waste in each one of 3,000 B.t.u.'s or a waste of the total energy volume of one of those pounds.

Viewed this way, I think the use of old newspapers for old energy is unattractive. One other consideration, the energy in garbage, the use of energy in newspapers in garbage has higher average heat value than the waste of the garbage.

Accordingly, these recovery plants are not volume limited or weight limited, they are B.t.u. limited. Accordingly, if you take a ton of old newspaper out of the garbage, you can put in more garbage.

You have capacity for garbage and the economics of this thing such that is pays the recovery system to do that. They make more money by taking the garbage provided, there is extract garbage available and burning it that way than they make if they use newsprint and there are many complicated reasons for this.

It is also true that if a plant is designed not to use newsprint in the first place and is built smaller, the average profit or more properly regarded annual loss per ton is less.

It pays to design a plant not to include newsprint. The problem again is economics. In economics, if a ton of coal cost $40 the economic value, if we assume that all B.t.u.'s should be valued the same, the value would be $20 or half that for 6,000 B.t.u.'s against the 12.

However, the companies like Wheelabrator-Frye who have built a plant in Saugus charge the city $13 to bring that old newsprint to the plant. That special charge should be subtracted from the $20 value.

In short, the social value of that energy is only $7 total. This is one of the critical points. If old newspapers are going to be used, are going to be recycled, who should be the company who builds the plant, who simply charges $13 to have it brought there, and it is sold, or should not the city keep that $13, which really gives it a great leg up on its cost, and also sell the paper.

I have noticed my time is up. I am not surprised. The only other item is that presently the United States is—we have a payment set up for $2 billion. Every ton of recycled newspapers that is made reduces that adverse balance.

As you all know, an adverse balance is a serious thing. It is like our living beyond our income, operating at a loss when it should be overcome. Thank you.

Mr. Rooney. Thank you, Mr. Scudder. Our next panelist will be Mr. R. J. Kulperger of the environmental systems division of Union Carbide. We recognize you for 5 minutes.

STATEMENT OF R. J. KULPERGER, UNION CARBIDE CORP.

Mr. Kulperger. Thank you, Mr. Chairman. I hope that the remarks I make will be informative to the committee. I would like to inform you in respect to Union Carbide's Purox system, which is one of the emerging technologies that is being considered broadly throughout this country for resource recovery, in very simple terms, the Purox system uses a high temperature pyrolysis reaction which is sustained by pure oxygen causing the production of a high quality medium Btu fuel gas.

Pyrolysis in itself is not a new art, it has been practiced for many decades. However, in the Union Carbide approach, oxygen is used to sustain this reaction, which ends up increasing this fuel gas, a considerable value.

The first major point I would like to make has to do with the issue of developing a resource recovery system from its inception to a commercial reality. I listened with interest last night and earlier this morning to the EPA and others talking about funding $3, $5, and $6 million development programs.

Union Carbide has been working on this particular system for approximately 18 years now and we have invested substantially in excess of $10 million of our own money. To bring it to its present state of commercialization, we presently have in operation a full-scale demonstration facility at South Charleston, W. Va., which is

capable and does process 200 tons a day of refuse, generating this fuel gas.

This facility was constructed and is operated at our expense. Just to have us more or less up to date, I practiced a little of my handiwork over there on that blackboard so that people can quickly relate to what goes into and comes out of this particular system.

What we basically do is have a large vertical shaft furnance in which we charge refuse to the top of the furnace and pure oxygen into the bottom. We sustain a high temperature combustion reaction at the bottom of about 3,000° F followed by pyrolysis in the upper zone in the furnace and then a draining of the refuse and the proceeding obviously continues to be discharged from the top of the furnace.

When I say fuel gas from which we remove the water that was contained in the refuse and send that fuel gas to a utility or to some other fuel gas use. At the bottom of the furnace, as I said, we run a 3,000° F combustion reaction and therefore, anything getting to the bottom of the furnace has to go through this 3,000° F zone.

We continuously tap from the bottom of the furnace, slag which drops into a water quench and then is removed from the furnace. The slag in essence is inert because it has to go through this 3,000° F zone.

I will concentrate a little bit more on the end products of this particular system, since I think an understanding of the quality and quantity in these products is really germane to the understanding of the economics.

The first and most important one is the fuel gas. For every ton of refuse, we charge to that furnace, we recover approximately 7 million Btu's of energy in the form of fuel gas.

This fuel gas has a medium heating value of approximately 350 Btu's per million cubic feet. It burns, the same temperature and with the same characteristics as natural gas.

Therefore it can be used as a supplement or to replace natural gas or in fact while in the generation of electricity or any other location where that type of energy is required.

That really is the key to the economic viability of the system. That is valuing and using this particular gas.

Next let us talk about the slag or the frit, as we call it, at Union Carbide, which is taken from the bottom of the furnace. This material, as I said, has to go through a 3,000° F molten state and so in terms of reference that I would use, you would pretty well have to call it inert.

It has properties which make it very desirable to use as landfill, to use as a building material, or road construction material.

Inert, I defeine—this material can be placed on the land without any adverse effects. Using your outline, Mr. Chairman, in terms of volume reduction for every 100 volumes of refuse, we charge at the top of that furnace, we come out with approximately 3 percent by volume of this inert material, which represents a 97-percent reduction in volume but more importantly since the material has use, it represents in essence a total volume reduction.

You do not have to take that into a landfill. Finally the waste water refuse has waste water in it, it is wet. It has in fact very undesirable waste water. We condense the waste water from the fuel gas as it emerges from the furnace.

We treat it onsite with a small waste water treatment system and discharge it into municipal system. This represents a cost.

My final comments would deal with the issue of the financing of such a facility and what types of legislative action or support we believe would be necessary not only in looking at a facility such as ours but in a resource recovery facility.

We talked about funding levels of billions of dollars in loan guarantees and things like that. I personally believe it could be done in a somewhat simpler fashion. The nub of any of these considerations and that is cost or economic viability, a facility like this you are talking about something like 30,000 dollars per ton per day of refuse treated or to put in a 1,000 ton facility, it would cost something like $30 million.

It is a bunch of money. As soon as I get over $50,000, it all becomes sort of a development thing. In general we could consider that tax exempt finance, it would be the lowest cost method of financing a facility of this type.

It represents a method of raising money in which industry does not have to make a profit on their money and therefore, the hopefully lowest net cost to the taxpayer. I point with respect to whether one of these facilities will make money.

We do not know. The name of the game is to try and get your costs as low as possible. If the energy from one of these facilities is valued at a tradeoff in terms of the energy that can be produced or used in equivalent means such as coal or oil, would result in a disposal cost in general of something like $5 to $15 per ton, for a large, say 1,500- to 2,000-ton per day facility.

You could have a net disposal cost as low as $5 per ton, so the economics appear to be quite viable. In terms of what actions might be taken to allow this or any other facility to be constructed and operated in a viable long-term method, we believe that price supports or price controls for the recovered resources would be very helpful.

If the energy is valued at its replacement cost for other types of premium treatment energy and if there is action that would guarantee a price support for that long term such that both the buyer and seller of the energy know that the overall deal is equitable between them and that neither will take a windfall profit, or a very serious loss as a result of change in market conditions, then the overall ease of financing one of these facilities is greatly facilitated.

Those conclude my remarks and I thank you very much.

Mr. ROONEY. Thank you.

Mr. FULTON. Mr. Chairman, before you go on, I would like to observe that I feel almost as if I am in the Ways and Means hearing room, listening to so many of your panelists today mention being tax exempt.

Mr. ROONEY. Our next panelist will be Mr. Ben McDermott of Nashville, Tenn.

STATEMENT OF BEN McDERMOTT, NASHVILLE THERMAL TRANSFER CO.

Mr. McDermott. Thank you, Mr. Chairman. I am real glad to present the Thermal story and I brought with me a chart showing Thermals process and I will turn on this chart so that you might see it.

Mr. Rooney. I wonder if you could turn it around for the benefit of the panelists, or put it over there so everyone can see it.

Mr. McDermott. Nashville Thermal Transfer is a nonprofit corporation. It was created in Tennessee by a corporate act and has the responsibility to convert solid waste into energy.

We have started from day one to exemplify the nonprofit phase unfortunately. In 1968, this program started to be a heating plant for the city of Nashville but the timing that particular time indicated that it ought to be bigger and so we went on and included the State of Tennessee.

This very humble beginning started and we ended up with a $16 million project and in 1972, we started construction. In 1973, the plant was fairly complete and we started production in early 1974.

The plant—in our desire to start off, we had to start off with fossil fuel because the state of the art that Nashville chose was based on what the engineering firm had started and as a result, our boilers were American built, the emission equipment American designed and more or less not taking advantage of the information available in Europe or Japan.

One year after we began our operation and we found out—this was in early January 1975, that the burning solid waste had several problems not identified in our original engineering study.

We found that the waters were experiencing some problem with tube wastage which correlates some of the things that we have heard to date from the other panelists about burning solid wastes, while we are disposing and using it to get into a reduction of waste program.

It also creates some problems for those using it. We have done some numbers since we started and we are now handling all of the State of Tennessee buildings, we handle the national administrative buildings and it ends up that we have 14 contracts including 23 buildings in the Nashville area and we are delivering heating and cooling.

Each of our solid waste boilers will burn 360 tons of solid waste per day. That figures out to 15 tons per hour. We are converting this solid waste to 100 percent energy and our centers or residue is extremely small.

This material, from the drawing as you can see, we introduce it from a large pit area, feed it into the boilers directly. We do not treat the waste, we take it as it comes, from either the city or the homes or some industry as it may be.

These problems, as you can see, we have an intense fire. We have a rather uncontrollable fire. This has raised some of the difficulties we have in operation. One of the very first things we found is that we had an inadequate emissions control system.

The reason being that we started out without enough money to do the job. Our $16,500,000 that we started on, our bond indenture, only allowed us $13 million to build the plant. We found out that the EPA came in another forum, some 3 or 4 months after we were operating and we ended up with an EPA enforcement order which required that we go out and purchase electrostatic precipators and/or a bag house.

We started this program in January or February 1975 to identify what would be proper emission control systems. In the meantime, we found that our boilers were totally out of operation on May 1, 1975.

This was caused by two things primarily, the overheating in the boilers and second, the action of the various gases on the side of the boilers. This resulted in two boilers being out of operation in May 1975 and we had to totally retube these—the lower section of the boilers.

The cost of this program and the need for repairs, plus the emission controls have rapidly put us in a position that a nonprofit corporation which is highlighting the highlight phase of it is in no position to cure its own problems.

Neither did we have any way to raise funds. This is the problem we have today. We are visited by from one to five groups a week who will come in, peeking around to see how Thermal is operating.

We are really doing a demonstration program. City X comes in and wants to know how we get into this particular field and they can learn the answers, the pitfalls, and we have identified the problems.

In the meantime, we have not failed to deliver steam and the coolant to the downtown building area. My copanelist mentioned: "Are you nervous?" You know, sometimes you get nervous occasionally, because I think of the 23-story hotel we have that has no alternate cooling or heating system except Thermal.

Our responsibility is to keep the steam supplied regardless of what fuel we use. We do have one backup boiler that operates on a solid waste fuel and unfortunately the cost of running with fossil fuel is pretty much out of our budget. That presents a problem.

One of the things that is quite noteworthy, we do not have a dumping fee, so when they were talking of the lowest fee in the United States, you really cannot go lower than zero.

Nashville dumps the garbage and solid waste from the public works department. We operate and do this service for Nashville at no cost. One of the things that we strongly feel is that somewhere the Congress could give Nashville Thermal assistance in the demonstration project.

In essence, my time has run out. I feel that is one of the most important things we have to contend with at the moment. Thank you.

Mr. ROONEY. Thank you, Mr. McDermott. In the interest of solid waste, I wonder if you could retrieve that note you gave Mr. McDermott and keep it as one note instead of handing out new ones. That is called recycling.

Our next panelist will be Mr. Bernard Eichholz, city manager of Franklin, Ohio.

STATEMENT OF BERNARD EICHHOLZ, CITY MANAGER, FRANKLIN, OHIO

Mr. EICHHOLZ. Thank you. Mr. Chairman. I am happy to see that the mayor of Nashville is here because I too am the old gray mayor. However, I am here to discuss or describe briefly the Franklin, Ohio facility which was built as a demonstration project, financed by the U.S. Environmental Protection Agency and it has the city of Franklin participating.

They—the Black Clawson Co., a private enterprise and the glass container manufacturers participate in this program also.

I would like to get back to that particular phase a little bit later, because I think it is really the key to what you are considering here today.

The Franklin, Ohio plant is 150 tons per day which extracts paper fiber and waste, gas, glass, ferrous metal, nonferrous metal, aluminum and can also, of course, be adapted to energy as we will later see.

It has been operating continuously since 1971 and in that regard it probably is the granddaddy of all of them about which you are talking. It is a wet system and since 1971 the Franklin Fire Department has not been to the facility. There have been no fires.

It is the most versitile of all of the systems that you will observe and hear about. It can be adapted to the area in which it is to be located. As an example of that, one will shortly be under construction in Hempstead, N.Y., 8,000-ton-a-day plant.

The thrust there will be on energy because of the electrical shortage on Long Island. In Franklin, of course, it was such a small plant, the energy resource recovery would not be a factor.

However, in Hempstead, N.Y. where you have 2,000 tons a day, energy is a factor and that contract has been entered into with the Long Island Electric Co. for this energy.

I might also mention that the Franklin plant is the only such facility that has children. We have the Hempstead plant which, of course, is only going through its pregnancy and the child is about to be delivered.

It has a growing child in suburban Tokyo that is in operation. It is the only facility that has a track record, the only facility that, as we say, has children and presumably will shortly have grandchildren.

I think we would be mistaken in wasting our time here today and I would have traveled a long while to tell you about the technology of the Franklin plant because I do not think that is really the problem.

If we want to spend all of our lives talking about technology, we will be exactly where we are today, which is not very far. The house in which I live in Franklin—when it was built, there were 8 million people in the United States: today there are 215 million.

The problem that we are facing is first of all that we have to find an inoffensive way of disposing of the waste, inoffensive to nature. We also have to adjust ourselves to resource recovery.

There is a more important aspect that I think most everybody loses sight of. That is in doing this we have to decide whether we

want to maintain freedom in the United States. How do you connect garbage with freedom?

I am sure that garbage is a universal problem, because of the fact that our facility has been visitied by people from about 30 nations so far, and all the States in the Union, but the freedom aspect comes about by the fact that there are billions of dollars necessary to be spent in this field.

This, of course, would create many, many jobs, but unless this is done in cooperation with, and in conjunction with, the free enterprise system in this country, we have gone a further step down the road to Socialism, Communism and all of the other types of "isms."

What I would like to suggest is that the committee should address itself to a loan guarantee program. I concur with the tax exemptions. We could further reduce the interest cost which is a sizable cost in any waste facility or any facility as far as that goes, but then I think the loan guarantee thing would spawn hundreds of these plants as opposed to the grant system where you give a given amount of money which is enough to take care of one big city.

The loan guarantee should not be for the total amount of the project because this would again foster all types of Rube Goldberg schemes. Private industry may be responsible for 40 percent of the loss if there is to be one and the Federal dollars would be guaranteeing 60.

You would have viable products that insurance companies and banks would look at and since they would know that 40 percent of that could be their loss, they will look into it in great detail.

Just basically I disagree with Mr. Kaplan who seems to indicate that there is not much technology in some of these phases since he said there was not much technology in extracting paper fiber.

We have been extracting paper fiber in Franklin since 1971 and piping it to an adjoining paper mill. Rather than have recycled paper come to my desk here, I am going to stop at this point and state that the Franklin facility is an example of what can be done by the cooperation of the Federal, local and State government and private industry.

I will also concur with Mr. Scudder that there are no two communities in disposal of waste that are alike. We are not in competition with what he is doing, he is not in competition with us. There is plenty of room in this field for everybody.

In Hempstead there is no point to extracting paper, there are no mills in Hempstead but there is a need for fuel or electricity and this is energy. The Franklin facility is the one with the longest track record, the one that has children and the most versitile.

I think that it also exemplifies and proves the cooperation that can exist between private enterprise and the various forms of government. Obviously since the chairman has left I can go on now until about 2:00. [Laughter.]

I will not do that though and I will thank the committee for this opportunity to be here and to present the story on behalf of the city of Franklin. Thank you.

Mr. MADIGAN. Mr. Eichholz, thank you very much. Mr. Schwegler?

STATEMENT OF RONALD SCHWEGLER, LOS ANGELES COUNTY SANITATION DISTRICTS

Mr. SCHWEGLER. My name is Ron Schwegler and I am with the sanitation district of Los Angeles County. Are we going to still follow the format of summing up at the end and have 5 minutes to say what we feel the Federal role should be because I would prefer to lay it out at that time.

There have been many points raised by the panelists already that I feel I would like to get to later.

To briefly explain the sanitation district, it is a conglomeration of 72 cities that are my board of directors and at least they are under a regional concept of 30,000 tons of waste generated in the Los Angeles area basin.

In sanitary landfilling operation, we handle 15,000 tons of those each day. The remaining 15,000 tons of that, there are a total of approximately 20 landfills that are either municipally or privately operated.

If indeed these sites had longevity, then my problem would be relatively simple but because of pervading problems for continuation of these existing fill sites, we, over a year ago, set out to determine what would be the status of technology in a recovery of resources as applicable to the Los Angeles area.

Most of you are well familiar with our coined word in Los Angeles and our smog, therefore we have a problem not only to look at the economics and viability also the environmental acceptability of the systems to be implemented in our region.

I personally was selected by our board of directors for visiting; It is now over 50 cities. It culminated at the end of a year's period into a report on the status of technology. The report is as good as the date the ink dried because we are moving ahead in this field.

If you go back to read chapters of it or review any certain process, you realize that if you made a statement in there that air emissions tests are inclusive, maybe now the air emissions tests have been performed on a certain facility.

As I sat and listened earlier this morning to several of the panelists, all trying to define the Federal role and as to demonstration grants and what should be done, I keep thinking to myself there is a tremendous array of technology that is available right now that is being looked at or demonstrated.

I think we have historically reached the point where I cannot understand why we cannot await some of the parameters and data to come from the certain technologies prior to wishing to either duplicate ones that may not be ready for duplication at this time rather than to continue to want to have our city feeling we have to have one.

Many times I heard on the east coast, and particularly this is the problem that would seem to stem from the east coast where land depositories appear to be lessening, that is that we are running out of space.

On my journeys throughout the east coast I took full cognizance of land and land possibilities. From the metropolitan areas that I

visited that currently has a $25 million installation within about a 12-mile region. I was out into the countryside where possibilities for sanitary landfill if indeed that would be the economical way to go there.

However, addressing this issue to some of the local people or the electric representatives, they indicated why they could not crossover a jurisdictional territory. To myself it sounds like that is indeed a problem in itself.

Rather than go off on a tangent, could we not address some other problems that really exist and that is how do we implement a regional concept for those who might enjoy these means?

Also we heard on the east coast that the land deposits, sanitary land filling runs anywhere up to somebody quoted $18. I do not know of such a high rate. In looking at it, we say is a piece of crawler equipment any higher on the west coast than it is on the east coast or vice versa, our the labor markets that different or is land so much more costly on the east coast?

The District recently paid $22,500 an acre for over 180 acres for sanitary landfill and yet we are still able to have a discharge fee at the gate of $2.25 up until July of this year, if we can seek any additional changes at that point.

What I am indicating at this point is that we did conclude that there is a tremendous array of technology that is under study and probably representing well over $500 to $600 is being researched at this time.

The districts are currently—some of you may have been reading about gas recovery from sanitary landfills, we have investigated the potentials, through NRG, a private firm with which we have a joint progress agreement.

We have created the status of technology report in order to give us better guidance in the future. As of the middle of last month, we signed a contract with a firm in Los Angeles, DECO, which some of you may have read about. It is the gentleman of movie fame, Mr. John Wayne.

We will be doing a complete energy and mass balance handling on a 50-ton-a-day system that is scheduled to be part of a system scheduled to be sent to Hempstead, N.Y. I hope they all have enough rubbish when all of these systems come.

We have been doing recycling of both ferrous, aluminum at some of the large land deposits. We have a voluntary recycling center down at our Palisades area, landfill. We feel that we want to be able to select the proper one, when these technologies are available and they will put us in a posture to provide the best services to the community.

Mr. MADIGAN. This week there was an article in the Washington Post about a problem in the Richmond, Va., area with sanitary landfills and methane gas explosions.

Mr. Schwegler, have you had any problems like that in California?

Mr. SCHWEGLER. I think I would be very comfortable in talking on this from the standpoint of that we have currently—I feel the technology and capacities are here today to mitigate any of the gas migration.

I have been in contact with Richmond. I know the problem. In the sanitation districts, we have a series of landfills, a series of 22 wells that are terminated to a flaring station that operates on a completely automated system and we are able to insure that the migration of those gases do not leave the land area.

This very system, which we have duplicated in one of our other fills, and we have approximately two homes, and these homes are in the $250,000 category which overlook our operation.

This is what lead us into the possibilities of looking to gas recovery from sanitary landfills. We inadvertently put the migration system on the outside of a landfill and thereby introduced air and so degraded the potential of the gas as to not make it viable for introduction into the southern California gas pipelines through a cleaning up process.

I think we can handle problems with the gas migration as engineers.

Mr. MADIGAN. With some of the people with whom we have talked referring now not to activity by a municipal or State government, but to activity by a private corporation, who might engage in the construction of a plant using the trash from several communities to fuel their own manufacturing plant or do something like that, they indicate a problem with local governments in that local governments in many States are restricted in the type of contract they can enter into or the length of an agreement they can make.

Is that a problem in California?

Mr. SCHWEGLER. I do not want to address the entire State of California but in the county of Los Angeles and the unique opportunity is there for the contractual arrangements because 72 mayors meeting twice a month at our board of directors room, that is a very unique form of government where we can get to this many cities at one time in order to either recommend or give guidelines for possible contractual arrangements, for implementation of a recovery system.

We do not have any of the territorial problems yet with refuse generated in say, not crossing West Revina on its way to a landfill.

Mr. MADIGAN. There is nothing in the State constitution or in State statutes that says a municipality may not enter into a contract which extends beyond a 1 or 2-year period of time or anything like that?

Mr. SCHWEGLER. I am not completely an authority on it but I note that we have entered into contracts such as the NRG contract and others, even with Fletcher Oil for the flaring of our oil and gases for our treatment plant. That was a 25-year contract. I can only address it that way, sir.

Mr. MADIGAN. Ladies and gentlemen, I think there are several other questions that we will want to ask. I know that the chairman has some questions he wants to ask. My instructions are if we have a call for a quorum which now we have, that I am to recess the panel for 15 minutes.

At the end of 15 minutes, we will come back and continue the discussion and at that point, I think Chairman Rooney will be back with us. Thank you very much.

[A brief recess was taken.]

Mr. MADIGAN. As we left, I was about to ask the gentleman from California about the problems of limitations on local government statutory land limitations. Mr. Kulperger, I believe, could enlighten us a little bit on that. Would you like to make a comment to the panel?

Mr. KULPERGER. I would be very happy to. We are operating broadly throughout the country involved in planning these Purox facilities. We find that in general enabling legislation is required at the State level to allow municipalities to enter into long-term contracts.

It does not appear, from what we have been able to see, that the by-State statutes, the municipality can make the decision enabling legislation at the statehouse must be passed.

It does, however, seem to be routinely done. It does not seem to cause too much difficulty.

Mr. EICHHOLZ. The problem that you have of trying to get communities to work together on one side is the fact that you can have antiquated legislation where you cannot get together.

The other side of the coin is where they do not want to, either through jealousies or what not. I would again like to point out that one of the advantages of loan guarantees would be that you would automatically solve that problem because a guaranteed loan was made in a county or city it is very obvious you are not going to guarantee a second one and put both of them out of business.

The marketplace would take care of that phase of the problem. I recognize that there are many antiquated laws, in fact, in my State we have one that would also retard some communities from doing anything.

That is what we call a 10 mill debt limitation. The State solved that in the case of building new switch plants by stating the debt for that purpose was outside of its limitation. They would probably have to do the same thing for solid wastes.

Mr. ROONEY. Mr. Scudder, I would like to ask you a question. Give me the figures you gave earlier when you mentioned if you could develop a market with how many tons of paper?

Mr. SCUDDER. 300 tons a day, sir.

Mr. ROONEY. Then you would establish a plant?

Mr. SCUDDER. Right, Given the availability of favorable financing.

Mr. ROONEY. It seems to me you have an open market here in Washington. You could probably bring about five plants in? [Laughter.]

Tell me something about it. Then you develop a new plant and who pays for the development of the new plant?

Mr. SCUDDER. We do. There are no other costs, no other charges, once financing is arranged.

Mr. ROONEY. No charges at all?

Mr. SCUDDER. No. All we need then is an assured supply of waste-paper.

Mr. ROONEY. What would 300 tons a day yield to you in moneys?

Mr. SCUDDER. You mean what profit would we expect to make from that?

Mr. ROONEY. Right?

Mr. SCUDDER. It is hard to answer that just like that without a cost engineering study. A mill would cost somewhere between $80 million and $100 million, I would guess. Let me put it this way. To make it viable at all, we would have to have a return after taxes of about 6 percent minimum and this has been our experience with the mills we have built.

Mr. ROONEY. You feel, in your opinion, that there should be no role as far as the Federal Government with respect to outlays of money? You feel as though you can handle it at the private level, private sector?

Mr. SCUDDER. Yes, sir.

Mr. ROONEY. Do all of the other panelists feel the same about that?

Mr. KULPERGER. I would very much like to address myself to that briefly. The question of private versus public moneys, I think, is the issue, as opposed to private versus federal, either Federal subsidies.

In the public sector, it is possible to raise money without having to worry about a return on investment. If you take a look at an $80 million plant as an example, and then take a look at a corporate structure and how a corporation raises money, the cost of that money relative to the facility is around 30 to 40 percent than if it was raised with the public bond issue.

This just reflects itself finally in the cost of disposing of a ton of refuse at the site. I really believe that the issue is not so much—if it is private money, I would presume that it would be private money that would be under someone's umbrella, under an industrial revenue bond or something like that.

When it goes strictly to return on investment, I think the cost of that money drives the cost of revenue—of disposal up very dramatically. In your case, sir, if in our way, 6 percent was acceptable and you could raise the money by industrial revenue bonds, you would probably be looking at a more substantial profit in your operations.

Mr. SCUDDER. If I may, there is no question that the industrial revenue bond is beneficial, tax investment credits are beneficial, especially loan guarantees, as Mr. Eichholz, suggests, are beneficial.

They all go to the eventual capital cost of building the plant to reduce the cost of borrowing money, the total cost of capital that is a very serious expense.

Mr. EICHHOLZ. I think we are making a very serious mistake here, we are comparing applies with oranges. In Mr. Scudder's case, he has a market and a solution to paper but nobody has said what do we do with the watermelon rinds and tomatoes?

You see paper is just one small phase of this problem. If Mr. Scudder took all of the paper there is, we still would have the watermelon rinds and tin cans and all of the other materials to dispose of.

Mr. KAPLAN. Mr. Chairman, I would like to second what Mr. Eichholz says, in particular, the financial stimuli that have been suggested, as loan guarantees, have been suggested for their actual separation plants, for resource recovery plants, whereas what Mr. Scudder is talking about building is a plant that is a user of the separated material.

I have heard very few people suggest loan guarantees of Federal grants to build those sorts of private plants. Most people seem to be against that kind of thing.

Mr. ROONEY. I would like to ask both Mr. McDermott and Mr. Eichholz why Nashville chose its system and why did Franklin choose its system, which is the better system?

Mr. EICHHOLZ. Oh, Franklin. [Laughter.]

Mr. MCDERMOTT. I think our system was selected as a means of eliminating solid waste and landfill. They saw the very appearance that oil and fossil fields were going up, the costs were going up.

Each of our boilers is worth 300,000 barrels of oil a year. We are converting the total solid waste to energy. Our refuse that has been left over has been analyzed by the Bureau of Mines and we are now negotiating a contract to put in a recycled recovery of all materials that are in there.

One of the things is that we have an extremely high count of gold and some of them are much higher than the Bureau of Mines had ever seen before.

This leads us to believe, of course Thermal has a very unique situation. The solid waste belongs to the City of Nashville up to the point they drop it into our storage bin. Their trucks pick up the cinders and haul it away, as they will pick up the fly ash from the precipitators.

I really think our system will be quite adequate. We know what the problems are. It is a question of how we are going to pay for the necessary changes.

Mr. EICHHOLZ. Mr. Chairman, is it time for equal rebuttal? I suppose we have our system primarily because one of the city councilman was the inventor of it. Basically this brings out what I said before and is very, very pertinent to this issue.

There are not many communities in the United States who have a similar problem and a similar solution. We are going to have many different types of systems in the United States before we are finished because of many, many different types.

As the gentleman from Nashville said, they have a lot of gold and silver. Strange as it may seem, in Franklin, we have a lot of empty cartridge shells. We do not know what the natives are doing but this is just going to have to adapt to it.

We also have a lower than average percentage of paper because being a small community, we do not have a lot of offices and we do not have any governmental agencies other than the city so there is very little accumulation of paper.

I think basically we cannot say that one system is any better than the other because I think each community has a unique method and is just going to have to adapt to it.

Mr. MCDERMOTT. If I may make one more comment? In our particular case, we are using solid waste as comes from the homes. We are particularly concerned about World War II souvenirs such as a bazooka or a 105-millimeter shell.

Each time we go into the boilers and do any repairing, we have to have our people approach very carefully because usually we go in when they are still firing the boilers. We never know whether someone left a hand grenate in there or not.

The other day we got a motorcycle in by error. We have had some very strange things. We do not know what. We are taking it just as it comes with no treatment whatsoever.

Mr. ROONEY. We both contend that you will have better plants, then I will direct this question to Mr. Schwegler of Los Angeles. Why has the city of Los Angeles decided against the development of a resource recovery facility?

Mr. SCHWEGLER. I think possibly in fortification of what the gentleman from Franklin was saying, what is applicable in what situation, is not always applicable in another. The report concluded that in an environmentally acceptable atmosphere on a dependable basis, that we did not know of any system that was capable of immediate implementation in the Los Angeles County area.

Basically it is because of our very restrictive air quality that we have. In the conclusion we came to, not of the costing factors were costing such as right now. It is $2.25 a ton for land disposal in Los Angeles.

We are uniquely fortunate in Los Angeles to have immense landfill capacities. Right across from my office is 250 million tons of capacity yet to be used on one particular landfill.

We are fortunate in that respect, however, if the public so desires resource recovery, as demonstrated in the small community of Ames, Iowa, where 40,000 people have been called upon to support a $5,500,000 to $6 million amortization of a plant alone.

On possible through put capacities, it will probably run around $17 to $20 a ton just to amortize the plant. These are costly things but the people chose that and that is their right.

Mr. ROONEY. Mr. Scudder?

Mr. SCUDDER. Mr. Schwegler, spoke of air pollution and I would like to address the question in that relationship. Mr. McDermott spoke about the wastage of tubes in the boiler because of acids.

That is, I would think, because of the presence of halogens and in the incinerator they were going to build in New Jersey they put 500,000 tons a year of hydrogen acid gas in the air which comes from the burning of polyvinyl chlorides.

Plastics in some garbages have reached 13 percent. Nobody quite seriously can tell me what is the effect of that hydrogen acid gas at ground level. I have asked the EPA this question and I do not think anybody knows, but I think it is a question of the utmost seriousness.

The presence of this material is evidenced in Nashville by these acids eating the tubes. I would like to hear what Mr. McDermott thinks about that.

Mr. MCDERMOTT. I think most of our problem is the fact that we did not have proper combustion conditions which we have identified and are correcting. The lack of excess air and the presence of CO, these are some of the problems we found as far as technology is concerned.

One of the things we have now done is line the boilers with silicone carbide up to about a 24-foot-high level. Gases in the emission equipment, in other words, pretty well burn out.

We have an average amount of plastics now so we run about 9 percent. The gases are not giving us any problem. It is a question of the fact that this scrubber we have is much inadequate.

We have an electrostatic precipitator that will be operational in August of this year. Then I think I can answer your problem better but we feel the chlorides probably were one of the main attackers of the tubes. Actually it was the improper combustion equipment conditions that accelerated it.

Mr. EICHHOLZ. Mr. Chairman, I think this shows the advantage and benefit of a wet process system as we have in Franklin where we burn it in fluid-bed incinerators and we do not have all of these problems.

Mr. ROONEY. I would like to ask a question of the gentleman from Union Carbide. How much of its own money has Union Carbide put up to develop the Purox system.

Mr. KULPERGER. We have—it is substantially in excess of $10 million from the beginning of the development until now.

Mr. ROONEY. To whom are you trying to market your system?

Mr. KULPERGER. We have two large systems currently under design, one for the west coast, Seattle, Washington, which is about a 1,500-ton-per-day facility, and one in the New York area with about eight or nine entering preliminary design. We are marketing broadly to municipalities in this country and in fact, around the world.

In that context, by the way, and in answering the larger question you posed before, which system is best, no system is best, as was pointed out. The system that is best in any given situation is the one that does about three things, one, meets the environmental considerations and concerns in that particular area.

Mr. Schwegler pointed out Los Angles has some rather unique problems. They have smog. Our system, as an example, does not have a smokestack. When you take a look at a Purox system, there is no smokestack.

The gas is formed, it is piped away to the utility boiler and if the gas meets the standards for emission from that boiler, which in general we are finding to be the case, at least the Federal standard, then there is no atmospheric emission vis-a-vis that system.

Next, in terms of the recovered resources, they should be realistic. Today I might have a market for 300 tons of paper, what we are looking for of course is the value that can be placed on the recovered resources, which must be realistic, and there must be guarantee.

The last point has to do with versitility and I do agree with the earlier point. This is an evolving technology area, resource recovery. Any system put in and any manufacturer you care to name, that system had better be applicable to the problem today, and be capable of operating under tomorrow's environment.

For instance, if it becomes economically attractive to pull tin cans out, fine, the system should operate with the tin cans in a row. It becomes economically attractive to take out the bottles, the system should still be able to accommodate itself to that particular regime.

Those are the three factors, the environmental, the marketability of the products, and the long-term applicability of it to whatever the changing environment might be and I felt it was important to get it stated that way.

Mr. SCUDDER. I think it is important to realize that a ton of standard newsprint carries about $75 worth of interest and that a

$100 million mill or something of this sort, that the interest costs are becoming formidable.

We built our first mill in 1961 for $9 million and we are now talking about $100 million mills. The cost of that money is a significant thing. The SEC has ruled that interest costs cannot be capitalized which increases their cost.

In trying to build such a mill and trying to come up with a percentage of return that will make the mill plausible, interest costs are a major factor an amelioration of income taxes, of interest costs, through environmental bond issues and through tax incentives or something of this kind are important.

A $10 million mill, if you pay 10 to 13 percent interest which is about what it would cost the borrower on long-term borrowing today, you can see that the costs are fantastic. What can be done about those interest costs, is important.

Mr. ROONEY. The three other panelists on this panel today have any of your plants made any kind of profits?

Mr. KAPLAN. We do not have a plant that is in existence, we are conducting a study, Mr. Chairman.

Mr. ROONEY. How about the Nashville plant?

Mr. MCDERMOTT. No, we have not been able to make a profit.

Mr. ROONEY. Do you forsee a profit in Nashville?

Mr. MCDERMOTT. One of the things, we do not have a dumping fee, it is a zero fee, so at the present time we have not been able to generate enough revenue due to the restrictions of the environmental order.

I would like to ask one question of the city of Franklin. We run 24 hours a day, 12 months out of the year. How does he handle the maintenance problems or does he have the ability to shut down and do maintenance?

Mr. EICHHOLZ. We have the ability to shut down and do maintenance because we do not have that much. However, in Hempstead, they are going to run around the clock but instead of having one hydropulper they will have four.

Any three can take care of the situation.

Mr. MCDERMOTT. That is why I say on the Thermal process we are a very different concept because we have five main buildings in the city complex that have no heating and cooling alternate.

We are also building a $30 billion performing arts building for the State of Tennessee and saving something in the order of about $700,000 in capital costs by not putting in a unit.

Our demand never ceases. It has been sort of a series of having to keep running regardless of what it is.

Mr. EICHHOLZ. Nor would the man in Hempstead because there they are making electrical current, you never know when a fellow wants to get up at 2 o'clock in the morning to go to the bathroom.

Mr. ROONEY. Mr. Kaplan?

Mr. KAPLAN. Perhaps I could answer your question this way. There are companies such as Americology which, while there will be a tipping or dumping fee, are putting up their own money.

When the tipping fee is taken into account, and as Mr. Yakowitz says, the tipping fee must be fairly close to what has been the practice for landfill, when the tipping fee is taken into account, these companies expect to turn a profit on their investment.

I would like, if I might to ask one question of Mr. Eichholz. At Franklin, what percentage of the paper that enters the plant is recovered, how is it used and how far is it shipped?

Mr. EICHHOLZ. I would say about 15 percent of it is recovered. It is going to an adjoining maker of roofing felt because here again you have some prohibition against using recycled paper in cartons that might be used in food.

Of course you have to get into a further process of bleaching it and treating it, but in our case, we send it, pipe it to an adjacent paper mill which is maybe 1,500 feet away.

Mr. KAPLAN. What you are saying then is that your paper recovery is on the low side compared to what is in there and you really are not telling me that you could use this for waste news which is perhaps the larger and disbursed market?

Mr. EICHHOLZ. You can as long as it is not used for a container for food. I would like to get back to one other thing. I think here again we are losing sight of the real picture.

We keep saying, is there a profit. I perceive a day when we might put a penalty on the person who throws something away. Not only would we charge them for disposing of it, but we would even put a penalty on it because we are the prolific people in the history—in all of history.

In the case of Los Angeles, sure it is cheaper to landfill and I might call the panel's attention to the fact that the cheapest way of disposing of human waste is the outhouse.

You have to make up your mind what you want. This glass of water, if it is the only one left in Washington, has a tremendous price. The big mistake we made in the United States was in 1973 when I think we had most of the people of the country convinced that oil was a finite commodity of energy and then suddenly said oh, no, it has just become kind of a big show and now is going to be hard again to convince the American people that we do have a problem.

As Mr. Scudder said, it may not be an energy shortage so much as it is an energy crisis. I do not think it is a question of dollars and whether we want a landfill or not. We are going to come to the point where we are going to start reclaiming and reusing materials or else we will soon reach the end of the line.

Mr. ROONEY. I would like to make a personal observation. The cup you just picked up was manufactured in my district by the Dixie Corp. Mr. Schwegler?

Mr. SCHWEGLER. I heard this morning what various people would like to see in the Federal role and I take a different point of view from either the funding or subsidizing guaranteed markets.

From the standpoint of those engineers who have to make decisions as to which of these types or where is the status, which system is capable of being implemented in their community, we have little or no parameters or design data on air emissions throughout this Nation to make decisions on.

A data bank does not exist. I feel the Federal role could give us some extreme amount of help by providing this data. We attempted through Los Angeles to go visit some of these facilities and they are not particularly interested in having their emissions tested. They feel they are watched closely enough as it is.

We do not have this data. In addition to this, in visiting these facilities, the costing data is not there. It is poorly kept in many cases. I do not want to use one broad brush to paint everybody but we do not know the bottom line numbers, to operate these plants.

Therefore, as for community leaders to have to recommend to their city council a system that they are not too certain as to what it is going to cost, I think we need help and I think the Federal role could give us some help.

We have plants like Ames, Iowa right now that do not have the money to go in and study what it is costing them to run that plant. I think they are seeking aid from the Federal Government. I think this would be a very appropriate role to take.

In addition, with the EPA staffing they could assist some of these communities in estimating their quantities of wastes being generated. Again, it is not a universal applied law but in most areas it seems they have estimated the amount of recoverable and energy bearing waste they are producing.

I see this in estimates that were contained and envisioned for St. Louis at one time. They were talking 8,000 tons a day for two $2,500,000 location. Engineering judgments would not confirm this report.

The same goes for Ames, the same for Nashville. We do not know. They have no skills. They are estimating. I think we need help on estimating the tonnages for these communities. I think those would be three exceptionally good roles for the Federal people to take.

Mr. YAKOWITZ. May I?

Mr. ROONEY. I was going to address a question to both you and Mr. Kaplan. Explain this bioconversion plant and tell me something about what the market potential is?

Mr. YAKOWITZ. Bioconversion is where you actually feed the wastes to a digestor. It is called the digestor and it has biological medium in it, bugs, if you will, which act on the waste to produce a usable product, usually gas.

Mr. ROONEY. What is the potential market?

Mr. YAKOWITZ. If the gas is methane, the market is the same as for natural gas but it is slow, very slow.

Mr. KAPLAN. What we really attempt to do is in a tank simulate —not simulate but in a much shorter peiod of time do what goes on in a landfill. It is essentially a rotting process.

There may be a need to clean up the gas in the same way that they have been doing it at Palos Verdes in San Francisco to remove, I guess, it is CO_2.

Mr. SCHWEGLER. Basically CO_2.

Mr. ROONEY. The Chair has no further questions. If any one of the panelists want to ask a question to the Chair or any of the other panelists, they may do so at this time.

Mr. YAKOWITZ. I would like to direct a question to Mr. Kulperger, You suggested that your process produces about 350 British thermal units of gas. Does this vary at all with the composition of the waste which goes in?

For example, you may get a lot of leaves in fall with a lot of carbon in them and in the winter, you might get a lot less things in them. How do you take care of seasonal fluctuations in the garbage?

Mr. KULPERGER. Yes, it does vary. I picked 350 because that is right in the middle of the range of observed British thermal units content that we have seen. We have seen a lower limit of about 320 and an upper limit of about 380.

Mr. YAKOWITZ. Are these limits then satisfactory if you are supplying gas to be either methanated or ammoniated to these limits? These limits make a vast amount of difference?

Mr. KULPERGER. These differences do not make any great difference—it is just like prudent design, the contaminants that one would have in the gas are that which is in question which have been at this point in time as much as possible, carefully estimated, carefully measured and do not appear to prohibit converting this gas to ammoniated or methanated gases.

Mr. YAKOWITZ. You are saying that seasonal variations do not matter?

Mr. KULPERGER. There seems to be a pretty large dampening effect of the overall waste load in a given area and in fact you could have a very large variation in waste quality coming into the receiving area and they do not seem to make any difference because, again, there is a large inventory in the furnace and you have a large inventory in your waste holding area which essentially gets mixed as it comes in.

Mr. YAKOWITZ. You talked about possible Federal price guarantees or price supports to stabilize the market. I just wonder if any market which fluctuated widely, if the Federal Government is well advised to do something like that, because if in fact a support price is offered and in the ammonia market we understand the price is varying quite a bit.

Is it not possible that the Federal Government could get a bad deal, if you will?

Mr. KULPERGER. It is quite possible. The name of the game, however, is real estate resource recovery, not recovering something that is going to have a yo-yo effect in terms of marketability and its price.

In that regard, of course, energy is highly commendable as a recovery resource. It can be predicted with a great deal of assurance as to what is going to happen long term. When I talk about price supports, I am not talking about it in terms of the potential for loss of the project, but the problem being that the financial hazards will take no risk.

If you are going to vote a revenue bond of any sort and you are going to have Price, Waterhouse or anybody else like that peddling those bonds, there will be no risk associated with bonds owning.

I am not talking about the Federal Government taking a very risky position. I am talking about them taking a position that will allow the bonds to be sold at a competitive rate and will allow a mutual trade off between the buyer and seller of the recovery resource, be it energy or whatever.

Mr. ROONEY. Yesterday we had an exhibit at the Whitthall Pavillion of Congress and some of the materials have been moved over to room 2218, which is directly below this in this building.

It will be open until the beginning of the next session which will be at 1 p.m. We will recess until 2 p.m.

[Whereupon, the 4th meeting concluded.]

Economic and Institutional Barriers to Private Investment in Resource Conservation and Recovery

FIFTH SESSION—2 P.M.

Mr. Madigan. Ladies and gentlemen, in this last session, our panel will address perhaps the key issue to be resolved in accelerating the evolution of a better method of disposal of discarded materials.

That issues revolves around the method or methods this Nation chooses to use for financing new plants to dispose of discarded material. Analysts in this section represent companies and financial institutions who have already made a commitment to at least seriously explore the new technologies for resource recovery or energy conservation.

Stephen Lewis is an officer with the Mitre Corp., which is a well-known research corporation specializing in research for Government.

Robert Aldrich is the vice president of White Weld, an investment banking firm. Dr. Joseph Zbytniewski is director of Business Control for Americology, affiliated with the American Can Co.

H. J. Young is a senior vice president with the Edison Electric Institute which represents over 100 privately owned investor utilities. John Kehoe, Jr., is the vice president for Wheelabrator-Frye, Inc., an engineering consultant firm which manages an entire project from the drawing board to operation, including financing.

Mr. Dorsey Lynch is a vice president of public finance of the First Boston Corp. an investment banking firm and John Berenyi, is a vice president of the First National City Bank of New York.

All of these gentlemen are familiar with the problems involved in financing projects which efficiently dispose of discarded materials. I want to ask each of these gentlemen to address our topic of economic and institutional barriers to private investment for about 5 minutes at this point in our discussion.

I would like to ask Mr. Lewis to begin by giving us an overview of the economic and institutional barriers to private investment in resource conservation and recovery. Mr. Lewis?

STATEMENT OF STEPHEN G. LEWIS, MITRE CORP.

Mr. Lewis. Mr. Chairman, as you indicated, I am director of resource recovery programs for the Mitre Corp. of Bedford, Mass. I also happen to be a local elected official from the town of Acton in my home State.

For those of you who might not know about Mitre, it is a nonprofit Federal research contract engineering firm that works only for Federal, State, and local governments. We do not manufacture any hardware or products, nor do we work for private profitmaking industry.

For more than 4 years, I have been providing consulting services to State and local governments in planning and implementing resource recovery facilities and also studies for ERDA, EPA, and other Federal agencies.

This has included things like State and regional planning, analyzing markets for recovered energy and materials, preparing—procuring documentation, assisting in procuring systems, and I think, most importantly in negotiation assistance for cities in signing up long-term contracts for refuse delivery to resource recovery facilities.

Let me mention two important programs that I can draw some experience from. One is a system that is in Saugus, Mass. It is a private venture to which the companies involved in the joint venture began construction of a system without any government sponsored funding or planning whatsoever and also without any community commitments for the delivery of refuse tonnage there.

Once they had started this construction project, they went to the communities and asked them to sign up long-term refuse delivery agreements with that particular company. That posed a basic problem to the communities in the area and they had a number of questions they had to have answered.

These were questions such as, Who was this company? and how did the proposed technology work? and could they depend on it? Would the company, through the disposal fee, be obtaining windfall profits from operation of this system? What kind of disposal could the technology provide to the cities? In fact, what kind of level of service did the company plan to deliver to the cities?

Finally, the cities, of course, needed to know what the refuse disposal requirements were, and I might add, I think the company needs to know that also. I served as a third party, independent moderator or factfinder to help both sides answer these kinds of questions, and also to participate in the negotiation process over a period of about 1 year.

This resulted in a number of cities who did sign up for long-term refuse disposal.

The second project is that of serving as director of a group of consultants who are assisting our home State in planning resource recovery facilities to serve communities throughout the State.

This job involves such tasks as defining economically sized regions for regional systems, selecting sites, assessing markets, preparing procurement documentation so that the system can be procured, assisting in negotiating contracts, and so forth.

The State of Massachusetts plan is that it is assisting groups of communities to get there and from what might be called ad hoc regions, assisting groups of communities to obtain a long term refuse disposal facility that will be privately owned and operated somewhat like a franchise operation with the communities, of course, delivering the refuse to that particular facility.

Based on these and other kinds of jobs, I am operating on certain principles at this time.

One is that a resource facility, once it is built, is going to be there for a heck of a long time. It is essential that it do its job and do it efficiently so that the disposal fee that the communities will pay over a long-term period will remain as advertised at the beginning.

Second: Resource recovery is a complicated technology and there must be a company who will stand behind its technical performance. Thus, I think for the most part these systems ought to be operated by private industry and not the State and local government employees.

One of the problems is that the company cannot put the total cost of the system on its balance, so there must be some way of assisting in the financing.

Another principle is that the resource recovery system must and should be a financially self-sufficient operation. That includes of course the disposal fee as an income that the communities will pay.

Based on these principles, I am not in favor of construction grants. I think that construction grants for cities would essentially stop the kind of progress that has been made.

It would buy us the ownership and operation decision and responsibilities. I think it would defeat the responsibility of self-sufficiency that I mentioned. Communities making a decision to join and deliver the refuse to a resource recovery facility is a very complex one for them to make, primarily because of the many uncertainties that they see in these propositions.

First of these is unproven technology. Second, is instability in the market. They have very poor information about their own waste quantities. They have poor information about the projected performance of the system as to what their cost is going to be.

Finally, they have an inadequate understanding of what the proper role of industry is, vis-a-vis local government.

Another point is that there are very important economies of scale in resource recovery systems, which really says the larger you build them, the more economical many of them can become up to a point, of course.

That means that local communities must join together frequently and to deliver the refuse in a regional system. This poses so many important problems in local communities signing up.

There are a number of important ingredients that have to go into the floating of a bond issue for resource recovery systems. Not only must there be long term market contracts, for the energy or material product, but communities must sign long-term agreements to deliver their refuse to the facility.

Some economists call this a humped problem. The reason is that in order to get the facility built, the bond holders require the community delivery requirements or the community delivery contracts. The communities however will not sign up until they usually see something physically there.

We have a problem of not being able to have the facility without the contracts and we cannot get the contracts unless we have the facility. That leads me to one conclusion. I think there must be some means for the States or Federal Government to help guarantee a part of the refuse input risk.

This could be a loan guarantee type of program. I am not talking about a loan guarantee to take technical risks. I think that companies can, and will, be willing to guarantee the technical performance of their system.

I am not talking about a loan guarantee for the performance of the market. I think Congress has considered many other methods for that. I am talking about a loan guarantee for community performance.

What I am really saying here is that before the facility can be off and running the community refuse agreements must be signed and in many cases, these cannot be signed.

Therefore, one method to handle this is to have the Federal Government, through a loan guarantee program, essentially guarantee refuse input or a portion of the refuse input. I think in addition to that, there has been talk in the panels today and yesterday of the important role the Federal Government can play in research and development, demonstration and planning funds.

Thank you, Mr. Chairman.

Mr. MADIGAN. Thank you, Mr. Lewis. Mr. Berenyi?

STATEMENT OF JOHN BERENYI, FIRST NATIONAL CITY BANK, NEW YORK, N.Y.

Mr. BERENYI. Good afternoon, Mr. Chairman, and ladies and gentlemen. My name is John Berenyi and I have responsibility for public finance research, credit analysis and review of the public agency and related financing activities for First National City Bank, New York.

From this perspective, I would like to discuss with you briefly the future of private investment in resource conservation and recovery.

By way of background it is useful to outline some assumptions which I have to make concerning the state of the economy in the next 5 to 10 years, a span of time which will probably coincide with the development of large scale financing programs for resource recovery.

There appear to be two ways in which we could assume the economy will behave in this area; on one side there is the view that the management of monetary and fiscal policy on the national level will favor moderation with the corresponding benefits of stable economic growth, employment, and acceptable levels of inflation.

Following this line of reasoning, the capital and financial markets as well as interest rates will probably reflect relatively stable conditions. In contrast to this view of steady growth, another set of assumptions are possible.

This entails a world in which a high degree of uncertainty exists with the economy gyrating out of control, and fiscal and monetary policy unable to really fully control or even moderate the rapid economic perturbations.

In this climate, capital and financial markets, interest rates, and security prices will exhibit a great deal of instability and long-term investment capital will become very difficult indeed to obtain except for the highest quality borrowers.

It is reasonable to assume, it seems to me, that a relative degree of stability has to exist as a necessary characteristic of the economic climate in the next decade in order to enable both the public and private sectors to make the planned investments which reflect the most urgent national concerns and priorities.

In order to understand the investment decisions of institutional investors with respect to resource recovery facilities, let me describe some of the possible arrangements. Everyone who produces wastes needs a system for the recovery of discarded waste materials.

The participants range from purely private corporations to strictly governmental entities such as municipalities or regional authorities. Some arrangements represent a mix of public and private participation.

Each organizational arrangement may require a number of financial components and packages such as bank loans, general obligation municipal bonds, industrial revenue bonds, leases and other financing instruments.

As an investment analyst, I am most interested in the credit quality represented by the financing instruments and the underlying security elements, economic and financial, together which support the financing program.

One very important way in which one can determine credit quality and security strength is by making an economic and financial feasibility analysis of the project or recovery schemes which are to be financed.

The concern with credit quality is crucial since interest rates are usually lower for entities having a stronger credit standing or for financing arrangements which have a strong commitment of financial assets behind them.

What is really involved here is a determination of the potential risks in the investment which in turn influences strongly the involvement of potential investors. It should be remembered that the weighing of risks is essential in every financing activity from hospitals and universities, to electric and housing projects.

In determining financial feasibility, a question frequently asked is whether the facility is financially self-supporting from the expected revenues of the system. For example, will the fees, charges, and other moneys from dumping fees or tipping fees, sale of energy, sale of separated raw materials and commodities yield during the payout period be a sufficient flow of funds to cover principal and interest requirements on borrowed money and pay operating and maintenance expenses.

What investors are interested in is what happens when actual developments do not match projections, and flows of funds are not sufficient, for whatever reason, to pay all operating and capital expenses.

Can the investor be assured that other assets are pledged to cover unexpected emergencies. In a private financing, the general question is asked as to what extent the borrowing has the general backing of the corporation and, if so, what is the existing financial condition of the borrower.

In cases when the recovery facility is financed by the municipality or a group of local jurisdictions, investors are interested in the extent to which the general taxing power of the local governments or districts are pledged as security.

Can one count on a levy of unlimited ad valorem taxes of a well managed government or governments if the revenues from the proj-

ect are not sufficient to cover all expenses. What is the credit strength of local government in question.

Such tax backing, credit strength, strengthens the borrowing ability greatly.

When the combination of private and public sectors are involved the same rules or analysis apply. The contractual relationships between participating parties and the measured strength of each participant contribute to the financing program's overall soundness and viability.

The greater the degree of uncertainty present in the contractual arrangements, the more likely it is that investors will require additional pledges of security such as the general financial backing of a corporation, the taxing power of a local jurisdiction, or other Government guarantees of subsidies.

As a financial analyst involved in investment decisionmaking, and in looking at the economic feasibility of the resource recovery project, I would be interested in those incentives, subsidies, or guarantees which Government programs make possible and which limit the investor's risk and improve the financial viability of an arrangement.

I would like to call your attention to such examples as housing, ship finance, and student loan programs among many others where public initiative and investment makes private involvement possible.

As financial intermediaries in a highly dynamic capital market, banks and other financial institutions have provided short- and long-term loans, purchased bonds for their own investment portfolio and acted as underwriters and distributors of securities in the above programs.

Without Government providing the initial leverage, I doubt this could have been possible.

Mr. MADIGAN. Mr. Aldrich?

STATEMENT OF ROBERT ALDRICH, WHITE, WELD & CO.

Mr. ALDRICH. I have a prepared statement which I handed out and I will follow it in general but in view of the time, I will try to skip through it as best I can. I want to thank you for the opportunity to appear before this panel.

My name is Robert Aldrich, vice president of White, Weld & Co., international investment bankers, headquartered in New York City. My firm is a major investment banking firm for investment services and investment banking facilities and employs over 1,700 persons.

I am a member of the public finance department of the firm specializing in municipal bonds, or public debt.

In particular, in the area of solid waste, I have been involved in multiple solid waste programs and am currently involved as financial adviser to cities and their projects in California. We were also involved in the Saugus underwriting. We consider it a very successful first step in private financing of public solid waste facilities.

We believe that the private sector plays and will play a major role in the construction, operation, and ownership of solid waste

facilities. The primary motivating factors in this development have been:

One: The advanced solid waste technology requires the experience and skills of the private sector for construction and operation;

Further, private sector management and marketing skills are required to economically operate and profitably sell the recycled byproducts and/or energy produced;

Three: Lastly we believe financing techniques for private sector participation provide a more attractice alternative than the traditional method of public financing. The objectives of any public party in putting in solid waste facilities are again threefold.

One: To provide reliable and efficient collection and disposal services at the lowest cost;

Two: To accomplish this in a manner that is environmentally sound and acceptable, and

Three: To optimize the production of energy or fuel and the recovery and recycling of the valuable resources available in municipal solid waste.

I was interested in the man from City Bank's comments in terms of the test which he put forth on his willingness to buy or the quality measurements of a bond. A number of the tests were financing, as you notice.

One of the rationales for bringing in public support of such financing is it eases their problem of evaluating a project. I believe by bringing in the financing of the private sector and pointing out the risk of the private sector venture, puts all of us, the investment banker and purchasers of the bond and the investor, in a different analysis position, not merely evaluating the credit of the United States Government but evaluating the credit of the total project.

Historically, there have been problems associated with local and State governments getting together with private enterprise. Some of the problems were pointed out earlier, mainly the problems of having contractual agreements to meet the legislative requirements, in some cases, the constitutionality in the given State.

There have been some problems associated with site location, inability to pass garbage between sites, et cetera. It is our belief that these problems are being resolved and there is increased activity, very much so on the part of local and State governments, in developing solid waste projects with private sector participation.

The function of the investment banker is basically in the financing of these resource recovery units and includes the following responsibilities:

One: To appraise the project in relation to investor risks, to use the financing techniques at his command; to evaluate the appropriate risk-reward ratio, that is the risk between the participants and the risk that must be picked up by the investor. Indeed, despite some comments earlier today, there is a great deal of risk on the part of the investor and hence, he must be a sophisticated investor to take this into account.

Two: To structure a financial plan, using his knowledge of financial markets, to achieve the lowest financing cost within the economic and legal restraints existing at the recovery unit location. That is within the State boundaries.

Three: To provide adequate contractual safeguards to investors and also to recognize a responsibility and knowledge in the area to provide adequate contractual arrangements between the parties participating in solid waste facilities.

Finally: To create a security offering document to enable an investor to make an informed judgment about investing in the recovery unit on the proposed terms.

An alternative exists to the traditional use of general obligation bonds of local governments to finance disposal facilities which today incur high risks of uneconomic solution at the local level, the possibility of employment of unproven technology and consumes large commitments of the locality's precious capital market availability.

By utilizing private industry, local government can limit its risks, conserve its capital resources and gain the benefits of private enterprise management.

The fundamental tool available to private sector companies for financing solid waste facilities is the solid waste revenue bond—an extension of the tax-exempt industrial revenue bond concept.

By utilizing solid waste revenue bonds, the private corporation has access to the tax-exempt municipal market at lower than corporate interest rates and on attractive terms. That is the length of the bonds.

The company retains the full benefits of ownership as well as investment tax credit, this includes depreciation, and interest cost deduction.

The combined effect of these benefits made this form of financing the most economically attractive and provides to the private sector and public participants capital cost savings for a recovery unit while limiting financial exposure of the local governments.

For solid waste facility financings, they are structured so that the security behind the issue is contractual relationships between the participants together with the resulting cash flows.

The fundamental agreements securing its financing include: (1) The contract between the local governments and the private company for a guaranteed delivery of solid waste at some agreed-upon "tipping fee"; or (2) price per ton of waste received at the recovery unit.

That is the No. 1 structure that holds these private financings together. The second one is an agreement of the company to construct, operate and maintain the facility over the life of the solid waste revenue bond issue.

That is, it must be a company that is reliable and will be around 20 years from now and has the technology and financial resources to stand behind the construction operation and maintenance of these facilities. There are a lot of ways of measuring that.

Finally, and equally important are the arrangements for the sale of recycled materials and/or energy derived from solid waste.

The solid waste revenue bond is evaluated on the basis of the strength of the contractual agreements, the financial strength of the participants and an overall solution of the technology used in the project.

Within the basic structure of a solid waste revenue bond there are a variety of possible arrangements such as an equity participation,

on the part of the corporation entering the agreement or third party equity participation or leverage leasing.

The investment banker, prior to marketing the securities, evaluates the quality of the project and project participants and frequently utilizes outside expertise. By working closely with governmental agencies and the private sector participants, the investment banker can play a major role in the evolvement of the resource recovery industry.

The investor purchasers of solid waste revenue bonds include professional and individual investors. Professional investors include insurance companies, commercial banks, tax-exempt bond funds, investment counselors and savings institutions.

The bond underwriting departments of investment banking firms such as ours and commercial banks distribute many billions of dollars of new tax-exempt bonds each year and are in daily contact with potential investors of all types.

The structure and techniques used to distribute new tax-exempt securities is similar to that employed in the distribution of Federal securities, corporate bonds and other capital market instruments.

We believe that the quality of the private sector participants, and the availability of existing financing structures is such as to obviate the need for a major infusion of Federal aid.

We point that the potential availability of Federal loan funds can slow down and frustrate the development and construction of resource recovery facilities. There is a need for the Federal Government to provide the atmosphere for continuing development of solutions by retaining, for private industry and their public sector partners, the continuing availability of solid waste revenue bond financing by reaffirming its true public purpose.

Thank you.

Mr. MADIGAN. Thank you, Mr. Aldrich. Mr. Kehoe?

STATEMENT OF JOHN KEHOE, JR., WHEELABRATOR-FRYE, INC.

Mr. KEHOE. Mr. Chairman, ladies and gentlemen, my name is John Kehoe, vice president and general manager of the Energy Systems Division of Wheelabrator-Frye.

On behalf of Wheelabrator-Frye, thank you for the opportunity to discuss with you this afternoon our experience in financing, constructing, and operating a commercial scale solid waste disposal resource recovery plant which will dependably service the disposal needs of over half a million people and will pay over $1 million a year in property taxes alone.

First, let me acquaint you with my company. Wheelabrator-Frye is an environmental services company. In 1975 we had sales in excess of $330 million. We employ more than 9,000 people.

Our subsidiary, Rust Engineering, is one of the largest design construction firms in the United States. Our Pittsburgh based Air Pollution Control Division is among the leaders in the industry.

As a company, we are committed to resource recovery, solid waste disposal and in that area, to the maximum use of energy, materials, and municipal refuse. There are some in the industry who feel that a large-scale Federal subsidy program is necessary to overcome what

they perceive as economic and institutional barriers to private investment in solid waste disposal resource recovery projects.

Based on what we have accomplished in the Boston, North Shore area, we disagree. Based on our experience at Saugus, Mass., we at Wheelabrator-Frye firmly believe that privately financed solid waste disposal resource recovery plants can be built, wherever local government responsible for solid waste management and industries capable of providing proven and dependable technology are willing to assume appropriate responsibilities for commitments regarding waste availability, system reliability and the economic viability of the project.

We proved this could be done in the case of our Saugus, Mass., project. It represents over $40 million of debt and equity financing successfully arranged by Wheelabrator-Frye and our underwriters.

We firmly believe that such financing can be arranged again by our company or others for projects with demonstratable economic viability and operational integrity. Finally, let me summarize some of the advantages of private industry and the Saugus approach points to what we offer to the cities.

Private financing will conserve limited municipal capital resources. Private responsibility will free most cities from the need to acquire the needed technical and operating background necessary to manage the systems.

Private industry is able to offer cities full long-term service agreements, protection from the liabilities of owning and operating disposal systems by requiring payment only for services rendered.

Private financing costs, as has been pointed out, can be competitive with Government financing through the use of tax-exempt pollution control revenue bonds. Private industry is also able to take advantage as again has been pointed out where other tax credits and allowance is not available to Government entities and thereby further offset financing costs.

Most significant of these advantages is that resource recovery plants such as Saugus are property taxpaying additions to the communities, not only the local property taxes, but also State and Federal taxes as well.

As pointed out earlier, we will be paying in excess of $1 million a year in property taxes alone and that is in Saugus. Finally, with proven reliable technology the communities can be assured of their solid waste being disposed of in a dependable, environmentally sound and accepted way. Thank you.

Mr. MADIGAN. Thank you, Mr. Zbytniewski?

STATEMENT OF JOSEPH ZBYTNIEWSKI, DIRECTOR, PLANNING AND CONTROL, AMERICOLOGY

Mr. ZBYTNIEWSKI. I am Joseph Zbytniewski, director of Planning and Control for Americology, a business unit of the American Can Co. I want to thank you for the opportunity to appear before your subcommittee.

The future role of private investment in resource conservation and recovery is the most critical issue that must be resolved if we are to solve the problems of disposal of discarded materials and the development of new energy sources.

Companies such as ours have taken the first steps by building, operating, and in a number of cases, financing the developmental stage systems now underway.

We believe that the next step in achieving the full potential of energy-from-waste technology must be a national effort to get a number of second stage, or commercial demonstration facilities up and operating.

During this stage, we should be able to improve technology, find new ways to capture waste, and demonstrate to a number of communities whose characteristics and needs are varied, the social, environmental, and financial viability of energy-from-waste systems.

To move into this stage and eventually beyond, to full scale commercialization, we must first recognize that the capital requirements are great, and now simply beyond the reach of the industry.

All our studies and projections show that over the next 5 years, 30 to 50 demonstration recovery systems could come on stream if the Federal Government provides adequate support in the form of loan guarantees.

At today's costs of an average $20 million for each basic system, these projects alone would require close to $1 billion—and that's just to demonstrate the commercial feasibility of energy from waste across the country.

And so, the problem this Nation is facing is not one of technology; the first development stage projects have proven that resource and energy recovery works.

It is not one of manpower. For resource recovery firms have demonstrated an ability and a desire to build and run these processing facilities. They have the capacity to provide the technological, operational, and marketing know-how needed to establish and run these energy-from-waste systems.

And they have the experience, organization, and incentive to assume the marketing and product development risks inherent in this business.

And the problem is certainly not one of raw material supply, for our wastes are an unavoidable byproduct of what we need or desire to live.

The matter of finding capital for the demonstration phase of these energy-from-waste systems in the United States is a critical one. We believe that with proper support through an effective loan guarantee program, private investors could generate the capital required to demonstrate the commercial feasibility of these systems.

Federal legislation establishing such a program could thus encourage the fullest possible development and use of a valuable energy resource.

Mr. MADIGAN. Thank you. Mr. Lynch.

STATEMENT OF DORSEY LYNCH, FIRST BOSTON CORP.

Mr. LYNCH. My name is Dorsey Lynch. I am in the Public Finance Department of the First Boston Corp., which is one of the largest investment banking firms in the country.

In the resource recovery area, we are investment banker to the Connecitcut Resources Recovery Authority which is the first state-

wide authority that was formed to facilitate the financing of resource recovery facilities.

We are financial advisor to Dade County, Fla., investment banker in the Rhode Island Solid Waste Management Corp., and are also the investment banker to the Southern Acid Solid Waste District in Massachusetts and financial advisor to Briar County, Fla.

I would like to address my comments to three questions posed by the committee staff. Essentially the first one is, what is your function as an investment banker in the development of resource recovery facilities?

The second question is what type of financings are available from municipalities and corporations for resource recovery projects and how can investment bankers assist municipalities and corporations in the acquisition of resource recovery facilities?

An investment banking firm is primarily concerned with the acquisition of capital for individual projects, corporations and municipalities, and governments. In this special role, investment banker can play two different roles, the financial advisor or an underwriter.

The financial advisor provides professional advice to a capital seeker but does not actually provide the required capital either by directly loaning the funds or by purchasing any securities of the parties seeking the capital.

On the other hand, in its capacity as underwriter, the investment banker actually purchases the securities of the capital seeker for resale to a financial investor, institutions, or individuals.

In a sense, they are functioning as an intermediary between the capital need and the source of capital. Investment bankers do not lend their own capital which is something that many municipalities are confused on.

In connection with both roles, the investment banker must analyze the financial and financing viability of the capital need and assess his capability for securing the required capital.

Basically resource recovery facilities can be viewed as municipal service facilities but just like water and sewer facilities, or as entrepreneur adventures which consume raw materials and produce various marketable commodities and hopefully make a profit, much like an aluminum, steel, or chemical plant.

Financing in a municipal service function is quite different from financing an entrepreneural enterprise.

The basic financing mission for a municipal service facility is tax-exempt municipal bonds, either general obligation or revenue bonds. The primary security behind these bonds is the promise of a responsible body to pay a debt service on the bonds, either from user charges or taxes.

On the other hand, financing entrepreneural enterprise requires assessment of business risks and reliance on credit worthiness and experience of the entrepreneur. The basic financing ways are corporate bonds, equity, and tax-exempt and revenue bonds which have been discussed by various members of this panel.

Much of the current confusion and frustration regarding resource recovery financings stems from an inability to decide whether such

facilities should be financed as municipal service facilities or as private corporate entrepreneur activities.

Both private sector and public alike would like to lay all financing risks on the other party while maintaining control and retaining profit for themselves. This is an unlikely solution in my view since control and profit are usually associated with risk assumption.

In our economy today several proposed implementations are encountered by serious problems which are attributed to long delays, costly price increases, and partial or complete failures.

The successful implentation of the resource recovery system by region, State or local government, or by private companies is a tremendous challenge because these systems are complex, expensive, and risky ventures.

Despite what various representatives of industry may say, resource recovery technology has not advanced as far or as quickly as was once hoped. I think it is also necessary to draw a line between a discussion of technology in general and technology as it is proposed by a specific corporation.

I think here is a vast difference between the two. I think most experts would say the technology in general, to handle resource recovery problems, is available. I think most municipalities are extremely skeptical of that technology as presented by a variety of different companies.

Successful implementation requires detailed planning and analysis, sober and professional appraisal of realistic alternatives, prior to the issuance of any requested proposals. As elementary as this may sound, the vast majority of municipalities attempting to acquire resource recovery systems have not conducted such analysis in the depth required.

There is a very simple reason for this oversight. Most municipalities are not organized to invest significant front end moneys in project examinations, and similarly, do not posses the internal expertise or staff to conduct the required review.

Therefore, most projects are doomed from the outset because they start on an unworkable basis. One of the programs which I feel has been extremely helpful in alleviating what I view as the most important organizational and institutional constraint to resource recovery has been the technical assistance program of the EPA, which provides essentially three consulting services to municipalities.

It puts them in contact with a variety of different experts who have hands on experience in resource recovery and also provides planning grants which provide the front end moneys to hire consultants who are not willing to work on a prospective basis.

Once the preliminary analysis has been conducted the investment bankers should attempt to force recognition and understanding of the various acquisition and procurement techniques available.

Each such technique contains various financial, technical, institutional, organizational, and financing implications which must relate and agree with the municipality's overall objectives and goals and more importantly, resources.

Most unsuccessful acquisitions can be directly traced to this point. Beyond this stage in the process, an investment banker can assist in

various ways in develop of an RFP, evaluation of proposals, negotiation of contracts, and the actual acquisition of capital.

However, it should be clearly understood that the amount of time that investment bankers are willing to or able to invest on the front end in projects that appear to start on an unworkable basis is quite limited. Thank you.

Mr. MADIGAN. Thank you, Mr. Lynch. Mr. Young?

STATEMENT OF H. J. YOUNG, EDISON ELECTRIC INSTITUTE

Mr. YOUNG. My name is Jack Young and I am senior vice president of the Edison Electric Institute which is the principal national association of the investor-owned electric utility industry.

We appreciate the opportunity to take part in this discussion. The electric utility industry realizes that there is a critical solid waste disposal problem and that the utility industry has a potential part to play in the solution of that problem.

It also realizes that solid waste cannot be viewed as a major source of fuel for generating electricity but that wastes can be a partial help to the utility industry in future years.

With these ideas in mind, we have recently established an industry task force which is to serve as a coordinating body to encourage projects in use of solid waste as a powerplant fuel, to recommend policy to the industry, to survey activities and in general try to bring the utility industry into the picture more rapidly.

Earl Dille, who is executive vice president of Union Electric Co., is serving as chairman of this group and it includes officers of a number of electric utility companies which are involved in projects of one kind or another.

One of the first activities of this task force has been to make a survey of studies now underway by electric utilities.

We found that there are 49 electric utilities that are actively studying the use of municipal solid waste. These companies are currently involved in 62 utilization studies. Forty-seven of the studies involve purchasing a refuse derived fuel as supplemental boiler fuel; nine involve purchasing waste derived steam for power generation or district heating purposes.

Two involve purchasing electrical power from municipal solid waste projects operated by others. In addition, one utility is planing to own and operate its own resource recovery facility.

Of the 47 studies involving purchasing of fuel, 29 involve the use of shredded waste, four involve incineration of raw waste, three the use of pelletized fuel; six the use of a powdered fuel and five the use of a pyrolysis fuel.

Utilities which are beset by all kinds of problems in the course of carrying out its primary mission, want to undertake a resource recovery project or become involved with groups undertaking such projects really for four basic reasons.

One: Is the opportunity to make a profit. Under certain circumstances, it may be possible to enter into resource recovery purely as a business venture. Utility studies show that these opportunities may be infrequent though not impossible.

Two: Is to supplement available fuel sources. From the outside, this would appear to have the greatest appeal to utilities. Actually, utility studies show this not to be true.

Utilities need large amounts of fuel, high in heat value, and available on a realiable basis. Solid waste does not usually meet these criteria. However, under certain circumstances the availability of a supplemental fuel source can mean a great deal to a utility.

Three: To assist in solving a significant public problem. Utilities, unlike manufacturing companies, are permanent parts of the communities they serve. They cannot pick up and move.

As a result, they tend to place a high value on efforts at civic improvement and will go unusually far to help improve their service areas. Obviously, efforts of this kind cannot be undertaken if they disrupt the primary mission of the utility.

Fourth: To insure that a resource recovery project is compatible with the needs of the utility. This assumes that the project will be built no matter what the utility may do, that it will be producing a project which may be desirable for fuel by the utility at some future time, and that early participation in the development process will be helpful over the long term.

It is interesting that our survey shows that about 14 percent of the reporting companies would insist that participation in a solid waste project must result in a profit to them.

Over half the companies now involved in studies indicate their primary motivation to be public service.

The results of this survey demonstrate that utilities are willing to participate in MSW projects. I do not believe that any seeming hesitation of utilities to enter into such projects has been due to a lack of interest either in municipal waste as a fuel or misunderstanding of the solid waste problems of our cities.

Rather it has resulted from such factors as: the lack of a full scale demonstration of reliability, uncertainty regarding compliance with both present and future environmental regulations, lack of economic incentives, the problems associated with the siting of resource recovery facilities and the confusion caused by the lack of coordination both between the various Federal agencies charged with investigating resource recovery and within agencies charged with both research and development and regulatory authority.

Clear policy direction at the Federal level could do much to improve this situation and thus speed up progress in the use of municipal waste as a power plant fuel. Thank you.

Mr. MADIGAN. Thank you, Mr. Young. At the outset, before we start the questioning, let me express to each of you gentlemen, the appreciation of the subcommittee for your taking the time to come down here and be a part of this panel.

Several years ago as a new member of the Illinois legislature, I was confronted with a first issue, that issue being the disposal of sludge from the city of Chicago into the rural counties of Illinois which is, as you might imagine, a very controversial issue.

Now as the most junior member of this subcommittee, I find we are charged with the overall responsibility for disposal of solid waste to the degree that we can assist in finding a profitable way, an

exotic way, if you will, to dispose of solid waste, and we are very much interested in doing that.

The challenge to us is to do it in the most intelligent manner. Certainly all of you have helped considerably in that regard. This is the last panel of the symposium. We do have in the audience many people who have been on prior panels and some who have an interest in this and have just sat through the entire symposium.

There are two things I would like to do. First of all, I would like to give you gentlemen now on the panel the opportunity to ask questions of one another. If any of you have questions you would like to address to another member of the panel, and then for a few moments I would like to give the people in the audience a chance to also pose questions to you.

When we reach that point, if there is anyone in the audience with a question, I would appreciate it if when you stand, you would identify yourself by name and also whatever affiliation you might have.

Do any of you gentlemen have a question you would like to ask any other member of the panel?

Mr. ZBYTNIEWSKI. I would like to ask any one of the investment banking people represented here if they feel that use of industrial revenue bonds would, in the event the program took off to the extent that we think it will take off, namely about $1 billion worth of requirement of cash, if they feel that would have an impact on the municipal bond market?

Would it cause certain municipalities to shy away from that form of financing because it would affect their other contemplated borrowings.

Mr. ALDRICH. There can be two answers to this. One, yes, it does affect and two, it does not affect. I am of the school that you are talking in the order of ——

Mr. ZBYTNIEWSKI. It could be $16 billion over a period of time. However, the billion that I referred to is probably over a period of 5 years basically.

Mr. ALDRICH. Say it is in the order of magnitude in the billion dollars or so. Like my friends, when I used to work for Chase Manhattan used to say, every billion counts. In essence you have a municipal tax exempted market which is in the order of magnitude of $26 billion.

This type of financing is indeed for the public good and that is servicing a municipal function. Today industrial revenue bonds or pollution control bonds of which this is a part accounts for a little over I think it is about $2.7 billion.

I believe the impact on the municipal borrowing rate by solid waste financing in this technique will be minimal. Further, this is further minimized because it is believed in the public good and financing must come from some source anyhow.

Mr. LYNCH. If I can add a clarifying question. When you mentioned industrial development bond financing, do you mean backed by some type of Government guarantee or just industrial development?

Mr. ZBYTNIEWSKI. I meant industrial revenue bonds financed by the revenue project rather than by some form of guarantee.

Mr. LYNCH. I agree with Mr. Aldrich. We have had approximately 3 to 4 years. The volume in the pollution control bond market has ranged between a billion and two billion dollars and there has been no noticeable effect whatsoever on the market.

I think if industrial development bond financing did become a prevalent form of financing for resource recovery facilities and pressure started to be exerted on the municipal market, you would see municipalities being confronted with the choice between continuing industrial development, bond financing for new plants, pollution control facilities, the choice between that type of industrial development bond financing and industrial development bond financing for resource recovery facilities.

I think the overall analysis would weigh in favor of resource recovery facilities.

Mr. ZBYTNIEWSKI. What you are saying is that it would put other projects aside?

Mr. LYNCH. If pressure ever was exerted. I do not think it would ever be.

Mr. ZBYTNIEWSKI. That is my opinion also.

Mr. LYNCH. But also I do not think industrial development bond financing in the sense that it has occurred with pollution and all these facilities clearly exist in the resource recovery area.

I think you have a blend of credits in the resource recovery area. I do not think there has been a pure industrial development bond backed solely by a corporate credit for large scale industrial development facility.

If you look at it closely it is a mixup of industrial revenues and corporate revenues.

Mr. MADIGAN. Mr. Berenyi, as a general rule, what percentage of equity funding do you believe there should be before a project should go forward?

Mr. BERENYI. Before I answer your question, if I may I was trying to get into the conversation with the previous gentleman. My feeling is that before we consider industrial revenue bonds which have equity components, it is relatively important to understand the conditions in the capital and money markets at the present time.

One of the considerations we observe is that investors in general, whether it is insurance companies or municipal bond funds, pension funds, and so forth, are very credit conscious.

I am not certain at this point whether a large-scale entrance into the industrial-revenue-bond and the revenue-bond market is perhaps the best approach. I think a combination of financing arrangement which requires some amount of equity participation, some amount of local government participation is probably the best.

I think to answer your question would really require full knowledge of each project, each facility, each local or regional arrangement. Consequently, I would be tending to the direction that we are dealing with a complex market where you are dealing with local and regional arrangements which vary across the country.

In fact, as I am sure you were present with Dr. Savas from Columbia University who may have left out from his remarks one important point. I think a close reading of the study indicates that a

lot of local jursidctions right now finance solid waste recycling facilities and disposal facilities from ongoing general funds. They believe in pay as you go.

They believe in good modern management. You pay as you go. If you do not have the money, then—and you do not have a debt ceiling, if your tax ceiling has been exceeded, you do not borrow and you do not circumvent that ceiling by borrowing, you pay as you go.

I think maybe that is a good modern management technique for local governments to follow.

Mr. ZBYTNIEWSKI. I appreciate that comment very much. I think you have to understand there is a problem of waste recovery and the disposal of waste that sometimes they cannot overlook.

They may like to pay as you go but just cannot afford it and have to handle the problem immediately. I think what we are after here is a form of financing that we can rely on as a total market available for the whole resource recovery business as opposed to one which might have a disrupting effect on certain existing markets today.

I think that is a question to which we have to address ourselves.

Mr. MADIGAN. Yes, sir?

Mr. MACKAY. I am Bentley MacKay for the State of Louisiana. This is directed to you, Mr. Chairman. If you would tell your subcommittee about the Chicago sludge operation, it has all of the elements we have discussed here today, the production, storage, transportation, and disposition all mixed up with a little bit of politics.

I think they might learn something from that because it is a classic.

Mr. MADIGAN. Thank you. Do you gentlemen have questions for one another?

Mr. SHOEMAKER. I am Harry Shoemaker. I am a new member of the minority counsel. This question is directed to Mr. Young. Earlier in the symposium we heard some discussion about changing the trash and garbage by various processes into a feed gas for utilities.

What would be the lowest quality feed gas to supplement and even replace natural gas? What would be the lowest Btu content that this gas would have to have to feed your utility boilers?

What would be feasible to supply utilities as gas?

Mr. YOUNG. I am sorry. I cannot answer that question; I will try to get an answer for you if you like.

Mr. SHOEMAKER. OK; yes.

Mr. MADIGAN. Mr. Kehoe, what was the biggest problem you had in getting financing for the Saugus plant?

Mr. KEHOE. I would think that proving that we could do what we said we could do for the community. That would guarantee two things, the revenue stream from disposal and the revenue stream from energy.

We were able to have our investment bankers and their consultants who believed in fact we could do that. I think once they were assured that our approach was sound, and that it was dependable and that our economics, as we estimated, the economics of the projects to be, indeed could be met.

I think once we proved that to their satisfaction and to their engineering consultant firm's satisfaction, that we were well on our way to a successful financing.

Mr. MADIGAN. So there necessarily is not a role in the problem you could describe for the Federal Government, something the Federal Government could have done to make your work easier?

Mr. KEHOE. I do not know that the Federal Government could have come in and eased the pain of getting that done. I think the responsibility was ours in that we were in fact telling the communities and the General Electric Co. that in fact we could deliver, dependable performance to the communities at a certain price and that we could in fact deliver energy to the General Electric Co. dependably, that the technology was certainly proven.

Once we had done that to everyone's satisfaction, and I do not want to downplay that, that is extremely significant, I think that is the entire problem. Once you can do this, and do the kinds of things Mr. Lewis pointed out that are of major concern to the communities, that in fact they are being dealt with honorably, I think you are well on your way.

I think the private enterprise approach to the solid waste disposal resource recovery financing then is a very possible way to finance these projects. I further think that now based upon our performance, and the dependability that the citizens of many communities we serve now have for the system, and having found out that we make a pretty good neighbor, and having found out that we will contribute quite handsomely to their tax base, as a property taxpayer, I think everybody is quite happy.

I think the real problem is proving that. We have proven that and that is why we are so firmly convinced that certainly we can successfully go about financing solid waste disposal-recovery projects.

Mr. MADIGAN. Mr. Lynch, I understand your firm has done a great deal of counseling for local governments in resource recovery and conservation projects. What would, in your judgment, be the most important thing that the Federal Government could do to help local governments get some of these things moving?

Mr. LYNCH. As I mentioned during my remarks, I think that there is a tremendous need for information transfer and education of municipalities in terms of the resource recovery business, what various risks and requirements are going to be.

Beyond that, I think the Federal Government can provide incentives once they have developed a viable project, where the costs can be competitive with all existing alternatives, where the technology proposed by whatever company were proposed by the municipality itself has some reasonable basis to be successful.

I think the Federal Government, in that case, may be able to provide spot guarantees, spot incentives, to eliminate some of the institutional problems that exist when ever you try to get local municipalities to work together, whenever you cut across various boundaries.

Mr. MADIGAN. Thank you. Yes, sir?

Mr. KAPLAN. My name is Bob Kaplan and I am with the Office of Technology Assessment of the U.S. Congress. I would like to address this question to Mr. Kehoe.

I believe you said very emphatically that a company that is offering the dependable, proven, demonstrated technology can raise the needed capital in private markets without the Federal assistance.

If the Federal Government institutes a program of grants, loan guarantees, subsidies, and what have you, how would that affect a company that has put up one plant to date, even though it may be an operating plant or two plants to date?

In other words, it does not have a technology such as water wall incineration which has been operating in many, many places around the world. How would that affect the type of companies ability to get financing?

Mr. KEHOE. What you are saying is we have one plant—we have an organization that has one plant up and it has invested x millions of dollars in that plant and it has proven it can do what it says to solid waste?

Mr. KAPLAN. In that one location, one plant and now it is seeking to expand its markets and seeking to put up plants in other areas of the country and seeking financing for this.

Mr. KEHOE. It would seem to me if it is a demonstrated process and can be proven to be dependable, and that the economics in the particular environment to which you are addressing the second plant to be built, I would think on the strength of the project, it should be able to be financed.

Mr. KAPLAN. You would say that one plant operating is sufficient to demonstrate that this is proven, reliable, technology?

Mr. KEHOE. I do not know I said that, but I will tell you what I will say. We do not mince words with each other. If I have a plant and just put a whole bunch of millions of dollars into it and I think it works, take it to the marketplace, and sell it to communities, I had better be able to back it up.

Mr. KAPLAN. Right.

Mr. KEHOE. If I go out and tell you that my process works and you send me out from your town, a competitive bid, and I respond to that bid and offer my technology to you,—you would then decide based upon my one plant, to which I would probably invite you, and have a demonstration performed, that my technology could do the job.

I would then present you with the economics as we did with our investment council and our investment people and prove to you, to your satisfaction, I would hope, that it is sound.

Once your technical advice had assessed the presentation I had given you I think we are off and running. You want me to say that water wall combustion processes are in excess of 100 in the world and you are right.

You want me to point out that technology is proven and dependable and you are right. I do not know what else to say. I will say this to you. The technology that we have in Boston working with local governments, where according to some our our country really began, was extremely difficult.

It was a tough job. I did not mean to imply that we did that, I would have loved to have had some assistance from the chairman, but we proved to their satisfaction that the technology we were going to use in the north shore, Boston, area would do the job dependably.

We now have one plant up. Some of our colleagues now have one plant up also. We think based upon the demonstrated reliability of our process in Boston that we should be able to do more.

I would think the proven technologies that are being offered to municipalities should be able to be financed. That would be the posture I would take because the people that are presenting those technologies are extremely competent companies.

There would be no way that I would doubt their integrity, that their systems work. There would be no way that I would, once I made an assessment, that it was in fact a solution for my city, that I would doubt whether or not they could be financed.

You are talking about reputable companies. I would think that speaks for—well for those folks offering that technology.

Mr. ZBYTNIEWSKI. I would like to comment on the statement of Mr. Kehoe. I do not believe that you can categorize the whole United States as having refuse, that is the same in all areas.

Therefore, you must have different systems and demonstrate the different characteristics which can be put through your system; without that, you are not going to have a universal application of resource recovery throughout the United States, in my opinion.

I think just the fact that resource recovery in the form of water wall incineration works well in Boston and Americology's system might work well in Milwaukee, it does not say the Americology's system works very well in Dade County without some added attraction.

When we bid Dade County, we added to our facility a Union Carbide pyrolysis system because we thought that was the best way to solve their problem. Therefore, it is necessary that one of these systems, for example, if ours worked in Milwaukee, we could not say to the world or the United States that is the system we can apply any place in the country.

Mr. MADIGAN. I am going to let this gentlemen.

Mr. LEWIS. Characterizing I think an environment in which we have one company that is selling a system to a city. I think throughout the country that is not really the kind of situation that we are going to see in most places.

What we are going to see in most places is what we are seeing now, a case where a company is attempting to set a system to a regional group of cities, communities or to one city who then is going to have to go to its neighbors and get them to agree to deliver refuse input into that system to make it financially viable.

Those kind of agreements, as I pointed out earlier, have to be part of the bond package that is put together to sell to the bond buyers. That kind of problem is the one I see most often and the one I think is very, very difficult to solve.

That is because we get into all kinds of past history about how communities work together. It is different in areas of the country. In some places, we find those communities have stated flatly that they would in no way work with the adjoining city no matter what; no matter what the price is, no matter what the agreements are, no matter who comes to them, they are not going to sign up with that city because they do not like each other.

We find other problems, for example, the regional plan calls for trucks go through one of the enclosed suburban areas. That suburban city says it is not going to join or participate and does not want the truck going through the town.

We find they are asking questions like where is the residue going to be disposed?

Mr. KEHOE. I agree. I conceive in no way of competing as an alternate disposal method with Schwegler who was on your panel this morning. I can hardly do it for $2.25 a ton. What I am suggesting is that we are talking about the attitudes of people.

Mr. ALDRICH. When we look at a project, being those representing the investor, we do look at the existing facilities onstream by the company coming in, we look at the technology as demonstrated.

Further and equally important, we look at the ability of the corporation offering assistance and services and their ability to perform the requirement and their contractual arrangement to indeed perform and the amount of guarantee they put behind such performance.

I do not believe there should be a direct Federal guarantee debt for several reasons. Such a guarantee relieves the responsibility of debt repayment from the participants and makes the evaluation of the whole financing—I think if you get into such a program whereby there is any indication that there is going to be a guarantee program or a grant program, all activity throughout the United States will suddenly cease.

The Federal Government may not appropriate it or at a rate necessary to get the job done and hence the solution to the problem will be dependent a great deal upon the budget of OMB, IRS, etc.

I do not think you get the kind of level of sophisticated evaluation and participation by the private and public sector, the engineering groups, and investment bankers that you will with either private or straight public deals.

If you have Federal guarantees, you will not be in the tax exempt market, you will be the taxable market.

Mr. MADIGAN. We have some hands in the audience.

Mr. WEST. Tom West, National Commission on Supplies and Shortages. What about Seattle and what about Saugus. Seattle goes to Mr. Aldrich. Aren't your clients out in Seattle right now representing to the Congress that they require some sort of price guarantee on the ammonia they produce?

Mr. ALDRICH. Seattle is not going to produce ammonia, they are going to produce gas via the Purox system. The problem there is not supply of garbage, the problem is also not in the technology and the gurantee of Union Carbide to perform its function.

The difficulty in the project has been, over the last 6 months, in terms of developing a long-term contract for the gas that will be produced from this facility. You have to evaluate what ERDA is planning to do there and still the negotiations—as to what that form of guarantee will be.

Mr. WEST. The question on Saugus, maybe it should go to Mr. Kehoe.

Mr. KEHOE. I will be the first to admit that the GE Co. is not exactly philantropic. I will admit they are an outstanding neighbor. I will further admit that we are delighted that we have them to work with in the project.

The GE Co. had been working on the problem for a long time and cooperating with the towns. We supplied them with steam into their header. We kind of make up a power facility, once we dispose of solid waste which is our primary concern.

Mr. WEST. Do you feel you are offering them a competitive price?

Mr. KEHOE. Yes to No. 6 oil as it is received in Boston already.

Mr. MADIGAN. Gentleman back here.

Mr. CROSS. John Cross, I represent an R.D. firm working with two or three local governments across the country to improve the technology of public service delivery. We believe that not withstanding the politics of jursidictional boundaries and so forth, the basic problem associated with local governments is their inability with regard to their own in-house capacity to evaluate technical and economical alternatives to literally approach the private industry with a degree of confidence and sophistication that allows private industry to come into their jurisdiction and bring technology and money associated with that to solving their problem.

We believe one of the greatest contributions this subcommittee and the Federal Governement can make is to increase the capacity of local governments on the State, county, regional, and municipal basis, to literally deal with the private sector on a competent basis to procure private investment, private technology and other commodities associated with that to solve their problem.

We think a great deal of that is simply bringing to them the ability to evaluate guidelines and develop criteria to evaluate offers, develop RFP's in the light of their own local or regional situation so that they can indeed move toward a fairly rapid decision making process with regard to acquiring advanced systems.

I would like to commend the subcommittee for inquiring into this. In fact, I have no major disagreements with anything that has been said here this afternoon except that I believe that there is a major problem at the State, regional, county, municipal level in their ability to assess, and evaluate and thus move toward decisions with regard to resource development.

Mr. MADIGAN. Mr. Yakowitz?

Mr. YAKOWITZ. The Seattle question being a specific one, let us go to a more general one, what is your general feeling about price supports or Government guarantee prices for some of the commodities from resource recovery facilities?

Would the establishment of an economic stockpile—we may be hot metal short or steel short in 10 years——

Mr. ALDRICH. I think in most cases, the product, what we have seen in evaluating the economics and the price is that utility companies in general are willing to pay for the power and ability to enter into long-term contracts is sufficient to operate without that form of guarantee.

Seattle, I think, is a highly unusual and unique situation. In New York City, the problem there is one of securing—in fact there is no

problem with garbage, they have 27,000 tons plus a day. The problem is that if New York City enters into a contract with a private corporation for disposal and conversion of that particular garbage, there is no way in which the private corporation can be assured that there is going to be a payment along with the garbage.

This has been a very serious situation. I think here the State or Federal Government might play a role in providing assurance to the corporations or investors that the garbage and tipping fees will come along as contracted for. I think New York is unique there.

Mr. BERENYI. I share Mr. Yakowitz' view. An education program has to take place not only with Federal and State government officials but with the local banker, the local investment specialists, etc. that would be making some commitments to technology purchase.

Mr. MADIGAN. Thank you. We are going to go 5 more minutes.

Mr. KAPLAN. Mr. Aldrich, you indicated that the situation in Seattle is unique and another unique situation in New York. Why should the Federal Government get into a guarantee program or an insurance program or any other kind of financial support program which is aimed at a particular unique situation?

Mr. ALDRICH. I presume the Federal Government is anxious to resolve unique situations as they develop. I think that is the problem with putting a blanket guarantee on the thing, that you get away from proper evaluation.

I think the Federal Government does have the tools necessary to, through ERDA and EPA, wrestle with unique situations. I think this puts the special responsibility on Government and not investors to evaluate such projects and come up with an explanation.

Mr. MADIGAN. May I just in summary say that I think this has been an excellent panel and the committee is very grateful for the expertise, the knowledge, and obvious experience that you gentlemen have had and your relating all of those things to us.

I know that it will be very valuable to us. I would like to invite everyone on the panel and in the audience to exercise at any time the opportunity or privilege to communicate further to this subcommittee any thoughts you might have.

It is always possible a hour from now or several days from now as you are thinking about what has transpired here and some train of thought or some idea might occur to you, that would be beneficial to the subcommittee, in that regard, we would like to keep the lines of communication open and hear from you on anything you think might be of interest to us.

Again thank you all very much.

[Whereupon, at 3:46 p.m., Symposium on Resource Conservation and Recovery From Discarded Materials concluded.]

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